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PROCEEDINGS

OF THE

Bournemouth Natural Science Society.

VOL. XII.

SESSION 1919-20.

BRITISH MUSEUM
NATURAL HISTORY

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Bournemouth Natural Science Society.

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BRITISH MUSEUM
NATURAL HISTORY

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Introductory Note.

THE Bournemouth Natural Science Society was founded in 1903, being the successor to an older society which was formed in 1883 and dissolved in 1897. The early meetings of the Society were held in a room hired from time to time for the purpose, but the need of some fixed quarters was soon felt. To meet this need a small room was taken at 122, Old Christchurch Road, and, as this proved inadequate, in February, 1909, better accommodation was secured at Granville Chambers and retained for four years. In March, 1913, the Society took on lease from the Education Committee a large room on the ground floor of the Municipal College. In 1919 this also had to be given up, and the Society succeeded in acquiring a house of its own, 39, Christchurch Road. The formal opening was on February 7, 1920. It is hoped that the possession of this freehold house will enable the Society to offer its members many new advantages and to extend its activities in such directions as may seem advisable.

The objects of the Society are declared by the second of its rules to be "the promotion of the study of Science in all its branches by means of Lectures, Field Meetings, the Reading and Discussion of Papers, and the formation of Sections of its members devoted to any particular branch of the Society's work."

The Sections at present working are as follows:— **Archæological and Historical, Astronomical, Botanical, Entomological, Geographical, Microscopical and Zoological, Photographic and Record, Physical.**

It is hoped that the Geological Section, temporarily in abeyance, will soon be revived.

During the WINTER SESSION, from October to April, GENERAL and SECTIONAL MEETINGS are held. TWO GENERAL MEETINGS are usually held in each month, comprising Lectures and Demonstrations on various subjects of scientific interest, illustrated by lantern slides, diagrams, specimens or experiments.

SECTIONAL MEETINGS.—Each Section usually holds a meeting once a month. At these meetings which, equally with the General Meetings, are open to all members of the Society, the papers read are more specialised and technical.

Throughout the SUMMER SESSION, EXCURSIONS to places of interest in the neighbourhood are arranged and indoor or garden meetings occasionally held.

The management of the Society is vested in a Council, which is elected at the Annual General Meeting, held in October.

The Society possesses a Library available for the use of members. This is yearly becoming more extensive and valuable by the acquisition of standard text books and of books dealing with matters of local scientific interest. Books may, under certain conditions, be borrowed by members and there is a Reading Room in which works of reference may be consulted.

The Society's collections of archæological, botanical, geological, zoological and other specimens are now arranged in the MUSEUM. Articles on the collections were contributed to Vol. V. and Vol. X. by Sir Daniel Morris and Mr. W. G. Wallace respectively.

Members are elected by the Council and, in the case of those elected after February 7, 1920, pay an annual subscription of £1 for full membership (admitting to all meetings and excursions for the year).

A MONTHLY NOTICE, giving full details of all meetings, etc., is posted to every member before the beginning of each month, and a volume of Proceedings is published every year.

Application Forms for Membership, and further particulars, can be obtained from the

HON. SECRETARY,

Bournemouth Natural Science Society.
39, Christchurch Road,
Bournemouth.

Bournemouth Natural Science Society.

OFFICERS AND COUNCIL FOR 1920—21.

President:

Lt.-Col. Sir David Prain, C.M.G., C.I.E., F.R.S.

Vice-Presidents:

Henry Backhouse, F.R.H.S.
G. E. J. Crallan, M.A., M.B., M.R.C.S.
Field-Marshal Lord Grenfell, G.C.B., G.C.M.G., LL.D., F.S.A.
S. McCalmont Hill, D.C.L.
Rev. E. F. Linton, M.A., F.L.S.
Claude Lyon
Sir Daniel Morris, K.C.M.G., J.P., M.A., D.Sc., D.C.L., LL.D., F.L.S.
W. T. Ord, M.R.C.S., L.R.C.P., F.G.S.
Hubert Painter, B.Sc., F.C.S.
F. G. Penrose, M.D., F.R.C.P., F.Z.S., M.B.O.U.
A. Ransome, M.A., M.D., F.R.C.P., F.R.S.
R. V. Sherring, F.L.S.
Rev. Hy. Shaen Solly, M.A.

Chairman of Council:

Hubert Painter, B.Sc., F.C.S.

Deputy-Chairman of Council:

J. H. Ralph Smythe, J.P.

Council:

The Officers and Chairmen of Sections (ex-officio) and

Henry J. Ellis.
J. M. French.
A. D. George.
Miss S. G. Rooke.
J. H. Scott, M.E., M.I.M.C.E.
Rev. E. J. Douglas Simpson, M.A.
R. V. Sherring, F.L.S.
J. H. Ralph Smythe, J.P.
W. J. Woodhouse, A.C.P.

Chairmen of Sections:

Archæological and Historical: Rev. H. Shaen Solly, M.A.
Astronomical: Col. E. E. Markwick, C.B., C.B.E., F.R.A.S.
Botanical: Rev. C. O. S. Hatton, B.A., F.L.S.
Entomological: Joseph Neale, B.A.
Geographical: Claude Lyon.
Geological: W. J. Woodhouse, A.C.P.
Photographical and Record: R. Y. Banks.
Physical: Hubert Painter, B.Sc., F.C.S.
Zoological and Microscopical: F. G. Penrose, M.D., F.R.C.P., F.Z.S., M.B.O.U.

Hon. Treasurer:

George Brumell, A.R.I.B.A.

Secretaries:

Hon. Secretary: R. A. de Paiva, San Remo, 13, Carysfort Road, Bournemouth.
Hon Assistant Secretary: W. G. Boul, M.A., LL.D., D.C.L., 45, Lowther Road.
Assistant Secretary: J. F. Spencer, Glenthorne, 73, Richmond Park Road.

Acting Hon. Librarian:

Rev. C. O. S. Hatton.

Hon. Curator:

W. G. Wallace.

Hon. Editor:

F. B. Taylor, B.A.

Hon. Auditors:

E. Bicker. C. H. Blackett.

Bankers:

National Provincial Bank of England, Bournemouth.

Past Presidents:

1903-4 ... ... J. E. Beale (Mayor of Bournemouth).
1904-5—1905-6 . G. E. J. Crallan, M.A., M.B., M.R.C.S.
1906-7 ... ... H. J. Waddington, F.L.S.
1907-8—1908-9 . Dr. A. Ransome, M.A., F.R.C.P., F.R.S.
1909-10 ... ... Dr. A. Smith Woodward, F.R.S., F.L.S., F.G.S.
1910-11 ... ... Dr. Dukinfield H. Scott, M.A., F.R.S., F.L.S., F.G.S.
1911-12—1912-13 Sir E. Ray Lankester, K.C.B., M.A., LL.D., F.R.S., F.L.S.
1913-14—1914-15 —1915-16 ... } Sir Daniel Morris, K.C.M.G., J.P., M.A., D.Sc., D.C.L., F.L.S.
1916-17 ... ... The Rt. Hon. The Earl of Malmesbury, D.L., J.P.
1917-18 ... ... Sir Jethro J. H. Teall, M.A., D.Sc., LL.D., F.R.S.
1918-19—1919-20 Field-Marshal Lord Grenfell of Kilvey, G.C.B., G.C.M.G., LL.D., F.S.A.

List of Members.

Revised to 6th December, 1920.

* Honorary Members. † Past Presidents. o Original Members.
A Associate Members.
Members elected since August 1st in Italics.
Members resigned since September 30th in brackets [.....].
The year of election is given before the name of each member.

A

1912	Alabaster, Lady	Dil Aram, 36, Sea Road, Boscombe
1905	Alder, Mrs.	East Grove, Lymington
1920	Alexander, J. A.	Waverley, Rossmore Avenue, Parkstone
1913	Alexander, Saml. J.	Abbotslea, 5, Surrey Road
1911	Allen, Rev. F. A., M.A.	Staffa, Wellington Road, Parkstone
1918	Alleyne, Miss	Beechwood House, Wilfred Road, Boscombe
1906	[Allis-Smith, Miss E.]	Martello Towers, Branksome Park
1920	*Anderson, Col. E. B.*, C.B.E.	Woodmanton, 35, Wellington Road
1914	Andrews, W.	Connaught Grange, 81, Alumhurst Road
1905	Archer, J. W.	Windlesham, 5, Braidley Road
1905	Archer, Mrs.	,, ,,
1919	Archer, Miss C.	,, ,,
1913	Armstrong, Mrs.	27, Cecil Road, Boscombe
1911	[Atkins, W.] deceased.	The Hermitage, 40, Wimborne Road
1911	Atkins, Mrs.	,, ,,

B

1906	Backhouse, Hy., F.R.H.S.	Yelland, 23, McKinley Road
1910	Bain, Mrs.	14, Oxford Avenue, West Southbourne
1920	Ball, Arthur E.	104, Christchurch Road, Boscombe
1905	Banks, R. Y.	12, Portchester Road
1905	Barlow, E. W., B.SC., F.R.A.S., F.R. MET. SOC.	112, Cromwell Road, S.W. 7.
1912	ABarraclough, Aug., M.A. (Cantab.), F.R.G.S.	173, Richmond Park Road
1909	Barratt, J. Hayes	Brundon, 2, Surrey Road
1905	Bartlett, H. F. D., F.E.S.	1, Myrtle Road, Richmond Park
1920	*Bartlett, P. R.*	35, King's Park Road
1914	Bartlett, T. O.	Wilts and Dorset Bank, Westbourne
1918	ABeaumont, Miss E. J.	60, Fitzharris Avenue
1920	*Beausire, A.*	43, Hawkwood Road, Boscombe
1920	*Beausire, Mrs.*	,, ,, ,,
1919	Begg, Miss	Udale House, 56, Christchurch Road
1909	Benison, F.	Aldborough House, 14, Rosemount Road
1909	Benison, Mrs.	,, ,,
1917	Bennett, Douglas, M.A.	*Woodlands, Ashley Road, Parkstone
1920	Bennett, Risdon, M.A.	,, ,,
1905	Bennett, Miss E. C.	85, Talbot Road, Winton
1904	Bennett, H. Morden	Manor Lodge, 20, Manor Road
1920	[Bennetts, J. V.]	c/o Mrs. James, Trevenen, Howard Road
1920	[Berg, Count]	18, Florence Road, Boscombe
1920	[Berg, Countess]	,, ,,
1919	Best, Capt. W. H., L.R.C.P.	Trevorian, Stourwood Road, W. Southbourne
1913	Bilton, Miss C. E.	Dilkhush, 25, Parkwood Road, Boscombe

1912	Blackall, Miss E. E.	10, Harcourt Road, Boscombe Park
1908	Blackett, C. H.	Rosapenna, 16, McKinley Road
1908	Blackett, W. Eggleston	Blanchland, 21, McKinley Road
1918	[Blackford, J. R.]	Athelney, The Beach, Shoreham
1918	Blair, Mrs. Chas.	Ranawella, 39, Wimborne Road
1915	Blondel, Mrs.	Redroofs, Ipswich Road
1916	Bloomfield, Rev. H., M.A.	Moordown Vicarage
1917	Blundell, Miss M. J.	Chesterton, Kingsbridge Road, Parkstone
1910	*Bond, F. Bligh, F.R.I.B.A.	454, Gloucester Road, Bristol
1919	Bonnard, Mrs. C. E.	Brierley, Roslin Road
1920	*Borrett, Surgeon Capt, G. G.*, R.N.	62, Alum Chine Road
1918	Boul, Wm. G., M.A., LL.D., D.C.L.	45, Lowther Road
1918	Boul, Mrs.	,,
1920	ABourne, Miss C.	Moray House, 6, Percy Road, Boscombe
1914	Bradbury, Miss	La Bocca, 2, Portarlington Road
1914	Bradbury, Miss A.	,, ,,
1914	Bradbury, Miss E.	,, ,,
1908	Brazier, J. J.	Fairlawn, 48, Lowther Road
1920	Brierley, Rev. H. E.	Garth Carbery, Stourcliffe Road, W. Southbourne
1917	Brown, Edward	Wood End, Chessel Avenue
1917	Brown, Mrs.	,, ,, ,, ,,
1917	Brownen, Geo., F.C.S.	Talnas, Grove Road, Christchurch
1905	Brumell, Geo., A.R.I.B.A.	Maori, Richmond Park Avenue
1920	*Brumell, Mrs.*	,, ,,
1920	*Brumell, Miss M.*	,, ,,
1920	*Bryant, Miss M.*	Sunnyhill, Hampden Lane, W. Southbourne
1907	Bulfin, Ignatius, B.A.	The Den, 26, Knole Road
1908	Bulfin, Mrs.	,, ,,
1920	[Burrows, W. H.]	Highlands, 28, Lansdowne Road
1919	Burstal, Edwd., M.D., OXON.	40, Lansdowne Road
1915	[Burton, Jas.]	163, Richmond Park Road

C

1910	Cameron, Miss	Little Forest House, 19, Bath Road
1919	Cardew, R. K.	Stafford Lodge, 26, Dean Park Road
1920	Cardew, Mrs.	,, ,,
1918	Carter, Wm.	The Oaks, Parkstone
1918	Carter, Mrs.	,, ,,
1912	Carus-Wilson, C., F.R.S., Edin., F.G.S.	Altmore, Waldegrave Park, Strawberry Hill, Middlesex and Royal Societies' Club, S.W.
1920	Cassel, Mrs.	Branksome Dene, Alumhurst Road
1918	[Chadwick, Ellis, M.A.]	St. Moritz, Clifton Road, Parkstone
1918	Chadwick, Mrs.	,, ,, ,,
1918	[Chadwick, Norman Ellis]	,, ,, ,,
1909	Chandler, S. Whitty, B.A., J.P.	St. George's, 4, Cecil Road, Boscombe
1909	Chapman, Miss	Wiveton Hall, The Marina, Boscombe
1912	Charsley, Mrs.	Camborne, 48, Belle Vue Road, Southbourne
1918	Chart, Mrs. Jas.	Haddon Hall, Hinton Road
1912	AChilver, Miss K. M.	79, Richmond Park Road
1911	Clark, Walter Child	Michelgrove House, Boscombe
1920	Clarke, Miss E.	4, Watkin Road, Boscombe
1908	Coddington, E. F.	St. Frideswide, 94, Southbourne Road
1918	Colebrooke, H. W. V.	Lynton, 64, Lowther Road
1911	Collins, W. F.	Vellore, Overcliff Drive
1912	Cooper, Ernest	100, Old Christchurch Road

1909	Cooper, Mrs. J. Omer	6, Queensland Road, Boscombe
1909	Cooper, J. Omer, F.L.S.	,, ,, ,,
1908	Cooper, Rev. W. H. Windle, M.A., F.R.G.S., F.R.H.S.	The Birks, 2, Branksome Wood Road
1910	Cooper-Dean, Mrs.	The Old Vicarage, Pokesdown
1916	Corner, Rev. Arthur E.	Eversley, Branksome Avenue
1914	Cotes, Sir Merton Russell, J.P., F.R.G.S., M.J.S.	East Cliff Hall
1913	Cotes, H. V. M.	Meyrick Park House, Meyrick Park
1920	*Couchman, Miss E.*	Kadnar, Portland Road, Charminster Avenue
1919	Courtenay, Rev. C.	Windy Brae, Danecourt Road, Parkstone
1919	Courtenay, Mrs.	,, ,, ,,
1916	Cowell, G. E.	Hawthorns Hotel
1904	Cowie, C. G., M.A., M.D.	Bonaccord, Westminster Road
1903†	oCrallan, G. E. J., M.A., M.B., M.R.C.S.	Gouray Lodge, Gorey, Jersey, Channel Islands
1920	*Crawshaw, G. O.*, M.A.	Homeridge, Doveshill Crescent, Ensbury Park
1920	*Crawshaw, Miss E. F.*	,, ,, ,,
1920	Cressy, Miss H.	Netherbury, 3, Horace Road, Boscombe
1916	Crump, E. Compson	The Hurst, Burton Road, Branksome Park
1916	Crump, Mrs.	,, ,, ,, ,,
1920	Cunnah, E. E., L.D.S., R.C.S.	17, The Crescent, Boscombe
1913	Curme, D., Surg. Lt.-Col.	New Bohemia, 1, Nelson Road
1913	Curme, Mrs.	,, ,, ,, ,,
1903	oCurtis, W. Parkinson, F.E.S.	Drake North, Sandringham Road, Parkstone
1914	Curtis, E. H.	Aysgarth, Poole
1919	ACutland, Walter	Kenilworth, 22, Middle Road
1920	*Curlett, Miss K.*, O.B.E.	3, Carysfort Road, Boscombe

D

1914	*Dale, Wm., F.S.A.	St. Margaret's, Oak Mount Avenue, Southampton
1920	*Darke, Miss W. H.*	25, Hawkwood Road, Boscombe
1919	Davison, Miss L.	15, Dean Park Road
1920	*Davy, A. Humphrey*, M.D.	The Red House, 37, Alumhurst Road
1910	de Castro, Mrs.	Sunnydene, 76, Drummond Road
1915	de Castro, Miss M. B.	101, Evelyn Road, Moordown
1917	Dell, Wm. G.	12, Stourcliffe Avenue, W. Southbourne
1919	Dell, Miss M. E.	,, ,,
1918	Dence, Miss	Birk House, Wollstonecraft Road
1905	de Paiva, R. A.	San Remo, 13, Carysfort Road
1914	Dickson, Col. W. D., J.P.	Southill, 32, Dean Park Road
1914	Dickson, Mrs.	,, ,,
1919	[Didcock, Rev. Hy. R.]	12, Osborne Road, Winton
1919	[Didcock, Mrs.]	,, ,,
1919	Dieselhorst, W., A.M.I.C.E.	50, Surrey Road
1903	o*Dixon, J. R. L., M.R.C.S., L.R.C.P.	
1920	*Dodd, Col. J. R.*, M.D., F.R.C.S.	140, Richmond Park Road
1910	Dodshon, E., L.L.B.	Lloyds Bank Chambers
1917	[Dolamore, F. P.]	Boldrewood, Meyrick Park Crescent
1918	Dolby, Miss F.	45, Lowther Road
1919	Dollman, Miss K.	C/o. W. Gough, Esq., Crafnant, Penn Hill Avenue, Parkstone.
1904	Druitt, J., J.P.	Avebury, 10, Madeira Road
1920	*Dundee, Col. W. J.*, C.I.E., R.E.	Gulmarg, Keswick Road, Boscombe
1914	Dyer, J. H.	Saltoun, 54, Westbourne Park Road

E

1917	Edwards, J. R.	The Woodlands, 5, Hayes Avenue
1913	Ellis, Hy. J.	Chesterford, 86, Richmond Park Avenue
1920	Ellis, J. C.	Whyte Gables, Highcliffe, Christchurch
1904	Elwes, Captain G. R., J.P.	3, Yarborough Road, Southsea
1909	Evans, P. H. L., M.A.	Stirling House, 28, Manor Road

F

1920	*Fairbrother, Miss L.*	Knole Hall High School for Girls, Knyveton Road
1920	A*Fairweather, Miss N. R.*	19, Sunnyhill Road, W. Southbourne
1918	Fallows, J. A., M.A.	Danehurst, Brunstead Road
1918	Fallows, Mrs.	,, ,,
1919	Farmar, Mrs. K. A.	Whitton Lodge, Stevenson Crescent, Parkstone
1920	*Fawcomer-Farrell, Mrs.*	94, Beaufort Road, W. Southbourne
1918	Ffennell, Edwd. B., M.D.	West Heath, 23, Belle Vue Road, Southbourne
1914	Fielding, Thos., M.D.	Genesta, West Hill Road
1903	oAFirbank, Miss, LL.A., A.C.P.	5, Buchanan Avenue
1917	Forrest, Mrs.	Hillsborough, 36, Westbourne Park Road
1919	Fowler, Miss M.	Lerryn, Chessel Avenue
1919	Fowler, Miss R.	,, ,,
1906	Frean, G. M.	Cranicombe, Branksome Avenue
1910	Frean, Mrs.	,, ,,
1915	Frean, Miss E.	,, ,,
1913	[Freeman, Miss E.]	Corona, Annerley Road
1918	[Freeman, Geo. A.] B.SC.., LOND.	75, Paisley Road, W. Southbourne
1918	[Freeman, Mrs. M. H.]	,, ,, ,,
1918	[Freeman, F. G. W.]	,, ,, ,,
1920	A*Freeman, Miss L. H.*	75, Paisley Road, W. Southbourne
1909	French, J. M.	Jumpers House, Christchurch

G

1917	Garnett, H. A.	18, Campbell Road, Boscombe
1917	Garnett, Mrs.	,, ,, ,,
1920	*Garnett, Mrs.*	Haynes, Cliff Drive, Southbourne
1918	Gent, Wm. Hy.	Holme Cote, 30, Montagu Road, W. Southbourne
1913	George, A. D.	Chewton Lodge, Highcliffe, Christchurch
1914	Gill, Edwin R.,A.R.C.P.	Rosslyn, Seldown, Poole
1920	*Gillman, A. R.*, M.B.O.U., M.GEOL. ASSN.	Hatch End, Wilfred Road, Boscombe
1918	Godfery, Col. Masters John, F.L.S.	C/o. Messrs. Cox & Co., 16, Charing Cross, London, S.W. 1.
1903	oGoodall, T. B., F.R.C.V.S., F.L.S	Purewell Cross, Christchurch
1914	[Gosse, Wm., M.D., D.P.H., Camb.]	The Links, Sandecotes Road. Parkstone
1920	Grace, Miss S. E.	New Bohemia, 1 Nelson Road
1919	Graham, John, D.L. Co. Durham.	Findon Cottage, Durham
1919	[Graham, T. G. D.]	Cranemoor, Highcliffe, Christchurch
1920	*Granville, W. P.*	Woodrow, Browning Avenue, Boscombe Manor
1904	Gray, A.	Woodville, 26, Melville Road, Winton
1920	*Gray, Mrs. Chas.*	Elvaston, Beechwood Avenue Boscombe
1911	Gray, Geo. W.	Darena, 15, Wellington Road
1911	Gray, Mrs.	,, ,,
1920	[Green, Dr. E. A.]	Oriel Dene, 55, Wimborne Road, Winton
1920	[Green, Mrs.]	,, ,, ,,

1920	[Greg, Mrs. F. L.]	Fuji Yama, 9, Hengist Road
1918	Grenfell, Field-Marshal Lord of Kilvey, G.C.B., G.C.M.G., LL.D., F.S.A.	St. Rode, Parsonage Road
1914	Greves, E. Hyla, M.D., M.R.C.P.	Rodney House, 19, Poole Road
1914	Greves, Stanley S. Hyla	,, ,,
1917	Griffiths, Capt. David	Bakrota, 82, Belle Vue Road, Southbourne
1917	Grindley, Miss E.	Riverbank, Brockenhurst
1916	Grubb, Rev. H. P., M.A.	Surrey Lodge, Balmoral Road, Parkstone
1920	Gunther, Miss	Garswood, 27, Stirling Road
1919	Gwynn, N. C.	6, Berkeley Road
1920	*Guyatt, Mrs.*	Redlands, 41, Richmond Wood Road

H

1914	Haig, W. S.	Birchwood Cottage, Birchwood Road, Parkstone
1919	Hall, J. T., L.D.S., R.C.S.	Stoke Prior, 25, Poole Road
1910	Hamilton, Mrs.	Boscombe Place
1918	[Hamilton, Rd., M.D.]	100, Alexandra Road, Parkstone
1920	Hamilton, S. de C.	Reston Lodge, 1, Milton Road
1913	Hannah, W. Rainsford	West House, 30, Portarlington Road
1916	Hannah, Mrs.	,, ,,
1908	AHarding, Miss	Alma Road Council School
1920	*Hardwick, Miss*	143, Alexandra Road, Parkstone
1918	Harkness, Mrs. J. C.	Hawkley, 27, West Cliff Road
1913	Harris, Miss K.	Trescott Grange, Harvey Road, Boscombe
1912	Harrison, Henry	Eden Lodge, Surrey Road South
1914	Hartley, Dr. J.	62, Portchester Road
1914	Hartley, Mrs.	,, ,,
1914	Hatton, Rev. C. O. S., B.A. (Camb.), F.L.S.	Hinton Vicarage, Christchurch
1919	Havelock, Mrs. Broadfoot	Devonshire House, Richmond Hill
1920	Hawes, Miss	The Moorings, 27, Nelson Road
1917A	[Hawkins, R. W.]	Fairhurst, Christchurch
1917	Haydon, Clement J.	Ben Veula, 29, West Cliff Road
1918	Haythorne, E. C. C.	Forest Lodge, Burton Road, Branksome Park
1919	Heathcote, Chas., F.R.I.B.A.	Charters House, Western Road, Branksome Park
1919	Heaton, Guy, M.A.	St. David's, 51, West Cliff Road
1917	Henderson, Miss A. J.	Springbank, 22, Fox Road, Greenock
1919	Henry, Hugh S.	4, St. Anthony's Road
1911	Henslow, Revd. Professor Geo., M.A., F.L.S., F.G.S.	Danehurst, 40, Branksome Wood Road
1918	*Elected an Honorary Member	
1919	[Hewett, Miss]	159, Alexandra Road, Parkstone
1909	Hill, S. McCalmont, D.C.L.	Stonecote, Presteign, Radnorshire
1919	Hill, Rev. Thos. E., M.A.	The Staithe, 30, Knole Road
1919	Hill, Miss	,, ,,
1904	Hinton, Miss	Welcombe, 1, Argyll Road, Boscombe
1916	[Holgate, Mrs.] deceased	116, Parkwood Road
1910	Holmes, C. F.	Brackenwood, 37, Southern Road, West Southbourne
1909	Holmes, Mrs.	,, ,, ,,
1911	Holmes, Miss S. C. M.	4, Beaufort Road, West Southbourne
1911	Homer, L. V. C.	Carron, 54, Southcote Road
1920	*Horne, Miss J.*	34, Alumhurst Road
1920	Howe, Commander A. W., R.N.	Belmont, 59, Lowther Road
1911	Hudson, F.	Peñarol, Parkstone
1911	Hudson, Mrs.	,, ,,

1917	[Hume, Dr. Geo. H.]	Lawnswood, Beechey Road
1917	[Hussey, Chas.] deceased	18, Grand Avenue, W. Southbourne
1919	Hutton, S. K., M.B., F.R.G.S.	Kivalek, Parkstone Road, Poole

I

1905	Ibbett, F. W., M.A.	Central Education Office, Yelverton Road
1920	*Elected an Honorary Member.	
1914	[Instone, Thos.]	31, Portchester Road
1914	[Instone, Mrs.]	,, ,,

J

1920	*Jackson, A. J.*	6, Lorne Park Road
1912	James, T. B.	Trevenen, Howard Road
1912	James, Mrs.	,, ,,
1920	James, S.	,, ,,
1920	A*Jarrett, Percy,* B.SC.	Municipal College
1911	Jeffery, T. J. P.	Meldon, Ormonde Road
1912	Jeffery, Miss E. S. M.	Boscombe Grange, 4, Percy Road
1920	*Jensen, Chas. W. L.*	Lammermoor, 10, Gervis Road East
1920	*Johnson, J.*	46, Frances Road
1919	Johnstone, H. J. R.	Wolverton, 44, Alum Chine Road
1919	Johnstone, Mrs.	,, ,,
1908	AJones, W.	Council School, Boscombe
1905	Jones, W.	254, Old Christchurch Road

K

1910	Kay, A. J.	Winsgarth, 141, Lowther Road
1917	*Kelsall, Rev. J. E., M.A.	Milton Rectory, New Milton, Hants
1912	Keogh, Duncan	The Warren, 13, Richmond Wood Road
1912	Keogh, Mrs.	,, ,,
1916	Kersey, H. A.	Garrivoe, 3, Chine Road
1913	Killick, H. F.	Rawdon, 9, Marlborough Road
1916	Kilner, Miss E. M.	St. Mary's, Chessel Avenue
1919	Kilner, Miss R. M.	,, ,,
1919	Kilner, Miss S.	,, ,,
1919	Kilner, John	,, ,,
1920	*Kingsmill, Miss Agnes T.*	2, Campbell Road, Boscombe
1920	*Kingsmill, Miss Alice M.*	,, ,,
1920	Kitching, Mrs.	Fernworthy, Brunstead Road
1920	*Knowles, Rev. C. Q.,* M.A.	Inglewood, 29, Hawkwood Road

L

1919	Lacey, Howard	50, Wellington Road
1920	[Laidlay, H. W.]	7, St. Stephen's Road
1920	*Lambert, Miss M.*	Clanchattan, Dunbar Road
1918	Langley, Miss C.	96, Richmond Wood Road
1919	La Touche, Miss	Oakfield, Dane Court Road, Parkstone
1919	La Touche, J. N. D.	Stokesay, St. Alban's Crescent
1910	Lattey, W. F.	Linden House, 21, Hawkwood Road, Boscombe
1920	*Law, Miss D. M.*	Bridge End, 3, Parsonage Road
1918	Lee, E. Kenworthy	Rosebank, 39, Lansdowne Road

1919	Leech, Miss M. M.	5, Lansdowne Road
1919	Leigh, Mrs. A. H.	24, Talbot Avenue
1919	Leigh, Miss C. C.	Wood Lodge, Penn Hill Avenue, Parkstone
1919	aLeigh, H.	80, Victoria Road
1910	Lendrum, Miss A. M.	San Remo, 13, Carysfort Road
1917	Ley, Dr. Hy. Jas.	62, Herberton Road, W. Southbourne
1917	Ley, Mrs.	,, ,, ,,
1905*	[Liddiard, Jas. E., F.R.G.S., M.N.G.S. (U.S.A.)] deceased	Rodborough Grange, 66, West Cliff Road
1918	Lindsay, Miss L.	Seathwaite, Corfe View Road, Parkstone
1903o*	Linton, Rev. E. F., M.A., F.L.S.	Celtic House, Warren Edge Road, Southbourne
1920	*Lloyd, Col. R. O.*, C.B.	16, Forest Road, Branksome Park
1916	Logan, Mrs.	10, Argyll Road
1920	aLove, Wm. J. E.	St. Clement's School House
1909	Lucas, A.	Croftmoor, 23, Dean Park Road
1919	Luckham, J. Bennett, M.A.	Cranemoor, Highcliffe, Hants
1903	oLupton, Miss	Bolingbroke, Knole Road
1911	Lynch-Blosse, Rev. R. C., M.A.	Hawthorne Dene, 10, Cavendish Road
1911	Lynch-Blosse, Mrs.	,, ,, ,, ,,
1909	Lyon, Claude	Shalimar, Wilderton Road, Branksome Park
1909	Lyon, Mrs.	,, ,, ,,

M

1911	Macalister, R., M.INST.C.E.	Somerled, 29, Meyrick Park Crescent
1920	Macdonald, Ian B.	4, Wellington Road
1920	Macdonald, Mrs.	,, ,,
1908	aMackay, Miss	492, Holdenhurst Road
1911	McBean, Miss J.	Inglenook, 29, Parkwood Road
1909	McBean, Miss S.	St. Michael's, Buxton
1918	McLaughlin, Fredk. Jas.	3, Pinecliffe Avenue, W. Southbourne
1920	*McNulty, Rev. Thos. J.*, M.A.	St. Alban's, 4, Heathcote Road, Boscombe
1920	*McNulty, Mrs.*	,, ,, ,,
1920	[*McQuade, Dr.*]	Ourden, Highcliffe, Christchurch
1920	[*McQuade, Mrs.*]	,, ,, ,,
1920	Mahomed, A. G. S., M.R.C.S., L.S.A.	Astolat, 1, Poole Road
1920	*Male, H. C.*, M.D., M.R.C.S.	10, Church Road, Southbourne
1910	Mann, W. P., B.A.	Bonds, Garstang, Lancs
1905	*Markwick, Col. E. E., C.B., C.B.E., F.R.A.S.	The Knowle, West Moors, Dorset
1917	Marston, Miss G.	Bourne Hall Hotel
1913	Martin, Miss F. G.	32, Southbourne Road
1911	Martland, T., L.R.C.P., M.R.C.S.	Standish House, 3, Fitzharris Avenue
1906	Mate, Ald. C. H., J.P.	Elim, 3, Surrey Road South
1914	Mate, Sidney J.	10, Landseer Road
1918	Matthews, Mrs. J. P.	11, St. Katharine's Road, Southbourne
1919	Matthews, Miss A.	11a, ,, ,,
1920	[May, Mrs. A. J.]	Boa Vista, 105, Talbot Road, Winton
1918	Mettam, Mrs. Wilford	12, Crabton Close Road
1920	Miller, Miss E.	Denham, 17, Cecil Road, Boscombe
1911	Miller, Mrs. Wm.	Meldon, Ormonde Road, Branksome Park
1920	*Milne, Miss F. L.*	33, Windsor Road, Boscombe
1913	Moore, F. W.	12, Chestnut Avenue, West Southbourne
1919	Moorhead, Mrs.	Brightlands, 34, Crabton Close Road
1920	*Morgan-Thomas, Miss M.*	Wildown Cottage, Hengistbury Road, Southbourne

1908†	*Morris, Sir Daniel, K.C.M.G., J.P., M.A., D.SC., D.C.L., LL.D. F.L.S.	14, Crabton Close Road
1911	Morris, Lady	,, ,,
1918	[Morter, Percy]	52, Lowther Road
1908	Moss, Miss	The Grange, 52, Westby Road
1919	Mutch, R. S., M.D.	West Grange, Sandecotes Road, Parkstone
1919	Mutch, Mrs.	,, ,, ,, ,,

N

1919	Nankivell, B. W., M.R.C.S., (Eng.), L.R.C.P. (Lond.).	Woodstock, 2, West Cliff Road
1903	oNeale, J., B.A.	Clonenagh, 7, Montagu Road, W. Southbourne
1910	Neale, Mrs.	,, ,, ,,
1910	[Neale, Miss D.]	,, ,, ,,
1918	Neale, Miss J.	,, ,, ,,
1918	Neale, Miss C. M.	14, Carysfort Road
1912	Neave, Mrs.	Lingdale, 73, Lansdowne Road
1912	Neave, Miss	,, ,,
1905	[Neve, Miss G.]	The Haven, Sea Road, Boscombe
1914	Norton, John J., J.P.	Ashton Court, Branksome Park
1914	Norton, Mrs.	,, ,,

O

1920	*Oaten, Mrs.*	19, Sunnyhill Road, W. Southbourne
1917	Odlum, W. E.	Savoy Hotel, Bournemouth
1917	Odlum, Mrs.	,, ,, ,,
1917	Odlum, Miss D. M., B.A.	,, ,, ,,
1910	Oke, A. W., B.A., LL.M., F.G.S., F.S.A.	32, Denmark Villas, Hove, Brighton
1913	[Oliver, Mrs. E.]	The Carlton, East Cliff
1903	oOrd, W. T., M.R.C.S. (Eng.), L.R.C.P. (Lond.), F.G.S.	Bramber, 18, Littledown Road
1918	aOrmerod, Miss D.	Redlands, 20, Donoughmore Road, Boscombe
1920	Osborne, John H.	Woodside, Kinson
1920	Osborne, Mrs.	,, ,,
1920	Osborne, Eric A.	,, ,,
1919	Ottaway, W. E.	252, Old Christchurch Road
1918	[Owen, Price]	3, Durley Gardens
1918	[Owen, Mrs. S. Walshe]	30, Manor Road, Beckenham, Kent

P

1903	oPainter, Hubert, B.SC., F.C.S.	29, Talbot Road, Winton
1904	Painter, Mrs.	,, ,,
1919	Parker, Jas. A. D.	Brackenhill, Buccleuch Road, Branksome Park
1919	Parker, Miss M.	The Cliff, 13, Southwood Avenue, W. Southbourne
1920	*Parker-Jones, Rev. W.*	Cleve, Vale Road
1920	*Parker-Jones, Mrs.*	,, ,,
1920	Parsons, W.	Peebles, 26, Talbot Avenue
1920	Parsons, Mrs.	,, ,,
1920	*Paterson, Miss N.*	Tudor House, West Overcliff Drive
1920	Payte, Miss E.	Tower House, Commercial Road, Parkstone
1920	*Pears, Miss K. A.*	Goathland, Tower Road, Branksome Park

1915	Penrose, F. G., M.D., F.R.C.P., F.Z.S., M.B.O.U.	Rathkeale, 51, Surrey Road
1916	Penrose, Mrs.	,, ,,
1916	Penrose, Miss F.	,, ,,
1916	Penrose, Miss M.	,, ,,
1912	Pestell, Miss	Engelberg, Surrey Road
1918	[Pewtress, J. B.]	5, King's Park Road
1918	[Pewtress, Mrs.]	,, ,,
1911	Phillips, Mrs.	43, Alumhurst Road
1912	Philpott, Mrs.	c/o Miss Cheere, 58, Barkston Gardens, S. Kensington, S.W.5
1920	Pickford, Miss G.	Mount Pleasant, Hampden Lane, W. Southbourne
1920	Pilkington, Mrs. K. C. S.	The Steyne, 9, Manor Road
1920	Pilkington, Miss K. D.	,, ,,
1920	Pilkington, Miss L. D.	,, ,,
1919	Pirie, Miss P.	Fairleigh, Warren Edge Road, Southbourne
1920	Platten, Gerard, F.G.A.	Rotherfield Greys, New Milton, Hants
1918	[Platnauer, Capt. H. N.]	St. Olaf, West Overcliff Drive
1919	[Pollard, Mrs.]	Woodlands, 14, Percy Road
1914	Pollock, Mrs.	43, Wellington Road
1920	*Pontifex, Mrs. Dalton*	Dalton House, 68, Christchurch Road
1909	APovah, Edwin	35, Castlemain Avenue
1912	*Price, Miss A. N.*	Shelford Lodge, 96, Southbourne Road
1911	Pullman, A.	Wonersh, Hathaway Road, Southbourne
1918	Punch, Cyril	60, Wellington Road
1920	*Purchas, T. J.*	Morningside, 44, Southern Road, W. Southbourne

Q

1920	*Quayle, Lt.-Col. Edwin*, M.B.E., J.P., M.R.C.S., L.R.C.P.	Kia Ora, St. Alban's Avenue
1920	*Quayle, Mrs.*	,, ,,

R

1915	ARainer, A. J.	6, King's Park Road
1920	*Ramsbotham, E. G.*	Beaulieu, 46, Westby Road, Boscombe
1920	*Ramsbotham, Miss D.*	,, ,, ,,
1920	*Ramsbotham, Miss M.*	,, ,, ,,
1912	Rankin, W. Munn, M.Sc. (Leeds), B.Sc. (Lond.)	Technical College, Burnley, Lancs.
1920	*Elected an Honorary Member	
1916	Rankin, Mrs. Munn	Stoneleigh, Heron Court Road
1917	Ranshaw, Miss E. M.	9, Warren Road
1904	†Ransome, A., M.A., M.D., F.R.C.P., F.R.S.	43, Portchester Road
1918	*Elected an Honorary Member	
1918	Ratcliffe, Mrs.	Brooklands, 32, Branksome Wood Road
1919	Rayner, Miss A. M.	The Homestead, 9, St. John's Road, Boscombe
1919	Rayner, Miss F.	,, ,, ,,
1905	*Rayner, J. F., F.R.H.S., M.B. MYC. SOC.	Swaythling, Southampton
1919	Reeves, E. J.	Hillside, King's Avenue, Parkstone
1920	*Restall, W. T.*	The Quinta, 18, Pine Avenue, W. Southbourne
1920	*Restall, Mrs.*	,, ,, ,,
1919	Richards, Miss E. E. B.Sc. (Lond.)	Sedgefield, Tregonwell Road

1920	Richardson, Miss M. R. S.	18, Bodorgan Road
1920	Roake, Miss	St. Helen's, 9, Undercliff, Boscombe
1916	Roberts, Hy. Astley, B.A. (Lond.)	Shalvah, Wilfred Road, Boscombe Manor
1918	Roberts, Mrs.	,, ,,
1916	Roberts, P. E., J.P.	Northover, Dunbar Road, Talbot Woods
1916	Roberts, Mrs.	,, ,, ,, ,, ,,
1916	Roberts, Miss	,, ,, ,, ,, ,,
1910	Robertson, Mrs.	Struan, 66, Middle Road
1920	*Rogers, Miss C. M.*	5, Wharncliffe Mansions, Boscombe
1905	Rogers-Barns, Miss	Bevois Cottage, 25, King's Park Road
1914	Rooke, Miss S. G.	Norbury, 53, Paisley Road
1914	*Roper, Miss Ida M., F.L.S.	4, Woodfield Road, Redland, Bristol
1911	Ross, Rev. T. S.	Lennox, 16, Foxholes Road, Southbourne
1916	Rothwell, Mrs.	Whytton, Penn Hill Avenue, Parkstone
1912	Rutherfurd, R. C.	Bourne Hall Hotel
1910	Rutter, G. H., M.B.	Roxbury House, 22, Poole Road
1920	Rutter, Mrs.	,, ,,
1916	Ryley, S., Clement	The Square, Wimborne

S

1913	Saunders, Miss L. M	Pine Cottage, Chester Road, Branksome Park
1917	Saunders, Mrs.	c/o Dr. Ley, 62, Herberton Road, West Southbourne
1919	Savage, J. W.	12, Pinecliffe Avenue, W. Southbourne
1912	Scarlett, Miss A.	Fermoy, St. Alban's Avenue
1912	Scarlett, Miss K.	,, ,,
1912	Scarlett, Miss M.	,, ,,
1908	aScattergood, J.	Alma Road Council School
1914	Scholes, Denton	Craigmoor, 7, Branksome Wood Road
1915	Scholes, Mrs.	,, ,,
1919	Scott, G. B., C.I.E.	Glencoy, Surrey Road
1920	*Scott, Major Frank*	,, ,,
1920	*Scott, Mrs.*	,, ,,
1904	Scott, J. H., M.E., M.I.M.C.E.	Kirkby, 22, Linwood Rd., Charminster Pk.
1905	Scott, W. H., M.A.	Hendall, 15, Herbert Road
1916	aSeeviour, G. C., A.C.P., F.R.H.S.	St. Peter's School House
1918	Sells, Leonard P.	Pearl Haven, Canford Cliffs
1914	Sharp, Chas.	Langdon, Parkstone
1919	Sharp, Miss E.	,, ,,
1919	Sharp, Miss F.	,, ,,
1903	oSherring, R. V., F.L.S.	Hallatrow, near Bristol
1907	Sherring, Miss O. L.	,, ,,
1915	[Simcox, Miss W.]	203, Holdenhurst Road
1916	Simpson, Rev. E. J. Douglas, M.A.	Maesbury, 3, Cavendish Road
1920	Simpson, Norman Douglas	,, ,,
1918	Smith, Horace, M.A., M.D., Cantab.	Sunnyhurst, 7, Dean Park Road
1918	Smith, Miss M. A.	Woodside, St. Alban's Crescent
1918	Smith, T. Templeton, B.SC.	Pine Glen, 7, Spencer Road
1918	Smith, Mrs.	,, ,,
1920	*Smith, Walter H.*	La Maisonnette, 40, Southcote Road
1914	Smyth, W. Johnson, M.D. (Edin.)	Pirbright, West Cliff Gardens
1912	Smythe, J. H. Ralph, J.P.	Willstead, 22, Cavendish Road
1915	Smythe, Mrs.	,, ,,
1920	*Smythe, Miss D.*	,, ,,
1916	Smythe, Miss K. M	,, ,,

1919	Snell, Dr. Sidney Herbert	Purewell Hill, Christchurch
1919	Snell, Mrs.	,, ,,
1919	Snell, Wm. Edwd.	,, ,,
1912	Solly, Rev. Hy. Shaen, M.A.	5, Denewood Road
1917	Spencer, E. M.	22 St. Winifred's Road
1909	Spencer, J. F.	Glenthorne, 73, Richmond Park Road
1917	ASpry, Miss A. G., LL.A.	60, Fitzharris Avenue
1920	*Stay, Edwin*	Wimbledon Hall, Derby Road
1916	Stiff, Sydney Jas., B.SC.	Norden House, Corfe Castle
1916	Stiff, Mrs. F. L.	,, ,,
1916	Stiff, Miss M. J.	,, ,,
1908	[Stokes, R.]	Laverstock, Cliff Road, Boscombe
1920	*Stoney, Miss F. A.*, O.B.E., M.D., B.S.	Ardvoulan, 29, Poole Road
1918	Story, F. N.	Storyland, Warren Edge Road, Southbourne
1918	Story, Mrs.	,, ,,
1918	[Stuart, Capt, J. F., R.N.]	Oakleigh, Snowden Road
1918	[Stuart, Mrs.]	,, ,,
1918	*Sumner, Heywood, F.S.A.	Cuckoo Hill, South Gorley, Fordingbridge
1911	Swain, H. E.	Sorrento, Studland Road
1906	Swallow, E.	Westridge, Sandbanks, Parkstone
1920	[Swallow, Mrs.]	,, ,,
1920	Swayne, F. T.	24, Stourcliffe Avenue, W. Southbourne
1905	[Sworn, Mrs.] deceased	Normandale, 63, Lansdowne Road
1913	Sykes, Mrs.	Oak Lodge, 9, Talbot Avenue
1913	Sykes, Miss	,, ,,

T

1918	Tanner, Mrs. Edwd.	Normanton, 27, Marlborough Road
1916	[Tarr, Miss M. K.]	Sandsfoot, Chester Road, Branksome Park
1911	Tatchell, Leonard, F.E.S.	43, Spratt Hall Road, Wanstead E.11.
1915	Taylor, F. B., B.A.	Thurgarton, 55, Grand Avenue
1916	Taylor, Mrs.	,, ,,
1916	Taylor, Miss M. A.	,, ,,
1916	Taylor, Miss M. W.	,, ,,
1920	Taylor, W. W., M.A. Camb., M.A. Oxon.	82, Castlemain Avenue, W. Southbourne
1919	Thomas, Miss L. Y.	Cartref, Parkstone Road, Poole
1918	Thomson, Alfred S.	Sunnybrae, East Avenue, Talbot Woods
1911	Thomson, Mrs. Roberts	Monkchester, 17, Manor Road
1919	AThompson, Wm., M.A.	Meersbrook, Portland Road, Winton
1918	[Thompson, W. W.]	Sledmere, 19, Cavendish Road
1918	[Thompson, Mrs.]	,, ,,
1918	[Thompson, Miss]	,, ,,
1916	Thoroton, Rev. L .E. W.	Hill House, Spencer Road, Canford Cliffs
1920	[Thorpe, G. F.]	Sandelford, 18, Walpole Road, Boscombe
1920	[Thorpe, Mrs. M. S.]	,, ,, ,,
1919	Thorpe, Hy. C., B.SC., A.M.I.C.E.	64, St. Michael's Road
1919	Thorpe, Mrs.	,, ,, ,,
1911	Tickell, Miss S. M.	Pinewood, 56, Stourcliffe Avenue, W. Southbourne
1920	*Townesend, Mrs. G. B.*	31, Hamilton Road, Boscombe
1911	Towsey, Miss E. L.	14, Stoke Wood Road
1920	A*Troath, W.*	Langley, 53, Chatsworth Road
1911	Turner, J. E.	Bramley, Surrey Road
1914	Twemlow, Miss E. E.	Devon Lodge, 83, Alumhurst Road
1920	*Tyndale-Biscoe, Lt.-Col. A. S.*	Stornoway, 62, West Cliff Road

U

1912	Usherwood, Rev. Canon T. E., M.A.	Bagdale, Woodside Road, Parkstone
1920	*Usherwood, Mrs.*	,, ,, ,,

V

1913	Veale, Miss A. G.	Fairdale, Howard Road
1910	Veale, Miss L. H.	,, ,, ,,
1910	Veale, Miss M. C.	,, ,, ,,
1912	Veale, Miss B.	Lexden, 15, Richmond Wood Road
1917	Veale, Miss C. M.	,, ,, ,, ,,
1908	Vernon, Lieut.-Col., A. H., L.R.C.P., F.R.C.S.	1, Carnarvon Crescent, Boscombe
1918	Vernon, Mrs.	Drayton, Queen's Park Gardens
1918	Vernon, Miss	,, ,,
1918	Vickers, Herbert U.	32, Lowther Road
1918	AVorse, John	School House, Hinton Admiral, Christchurch

W

1903o†	Waddington, H. J., F.L.S.	Moreton, 107, Lowther Road
1918	*Elected an Honorary Member	
1916	Walby, A. E.	Netherton, 2, Dean Park Road
1918	Walker, Robt. S.	Ellesborough, Ormonde Road, Branksome Park
1918	Walker, Mrs.	,, ,, ,, ,,
1918	Walker, C. B. Osborn	,, ,, ,, ,,
1918	Walker, Miss G. M.	,, ,, ,, ,,
1913	Wallace, Wm. G.	Boveshill Cottage, Ensbury Mount, Bournemouth
1920	Wallace, Mrs.	,, ,, ,,
1912	Walter, Mrs. G. P.	Rusholme, 10, St. Anthony's Road
1920	Wanstall, Wm. S.	Del Monte, 6, Roslin Road
1920	Wanstall, Mrs.	,, ,,
1909	Warr, Miss A.	Cottesmore, Pokesdown Hill
1905	Waters, A. W., F.L.S., F.G.S.	Alderley, 2, McKinley Road
1906	Waters, Mrs.	,, ,,
1912	[Watts, Col. Sir Wm., K.C.B.]	The Priory, 53, Branksome Wood Road
1918	Webb, Mrs. Nasmyth	Bibury, Wilderton Road, Branksome Park
1914	Webber, A. E.	23, Tower Road, Boscombe
1909	Webster, Rev. T. S.	Devonia, 2, Chatsworth Road
1917	Webster, Mrs.	,, ,,
1920	Wells, Rev. Edwd., M.A.	Glen Roy, Studland Road
1906	Wells, H. B.	Stalham, 16, Studland Road
1913	Wetherell, Miss M.	Triana, 21, Harvey Road, Boscombe
1920	Wetherell, Miss S.	,, ,, ,,
1918	Whitaker, S.	22, Somerset Road, Boscombe
1920	*White, J. R.*, M.A.	Whitecot, 15, Linwood Road
1920	*White, Mrs.*	,, ,,
1911	Whiting, Albert	Rozel, 7, Pinecliffe Avenue, West Southbourne
1920	Whiting, Mrs.	,, ,,
1920	Whittle, Mrs. E.	Doveshill Farm, Ensbury Mount, Bournemouth
1916	Whyte, A. C.	Byberry, Roslin Road
1916	Whyte, Mrs.	,, ,,
1916	Whyte, Miss M. C.	,, ,,
1916	Whyte, Miss M. N.	,, ,,

1920	Wigram, Miss J.	Hurlingham, 14, Manor Road
1913	Willes, W. A.	Elmwood, Cranborne Road
1920	Willes, Mrs.	,, ,,
1915	Williams, Dr. C. E. Campbell	Branksome Chine House, Beech Road, Branksome Park
1919	Williams, John	Stebenheath, 56, Southcote Road
1918	Wing, Miss	Sunny Hall, 19, St. Swithun's Road
1917	Wingfield, T. R.	12, Suffolk Road
1914	Wood, W. H.	Arosa, Tower Road, Branksome Park
1916	Wood, Mrs.	,, ,,
1918	Wood, W. B.	,, ,,
1920	*Woodhouse, Rev. A. P.*	Deanhurst, 5, Littledown Road
1905	Woodhouse, W. J., A.C.P.	35, Chatsworth Road, Malmesbury Park
1918	Woodhouse, Mrs.	,, ,, ,,
1914	AWoodhouse, Wm.	Attleborough, 34, Wimborne Road
1917	Woodward, Chas. H., A.M.I.E.E.	19, Queensland Road
1909	Woollacott, J. C.	Solent View, 141, Belle Vue Road, Southbourne

Y

1918	Young, A. A.	35a, Branksome Wood Road
1918	Young, Mrs.	,, ,,
1917	AYoung, Miss A.	6, Salisbury Road, Boscombe

RULES OF THE
Bournemouth Natural Science Society.

Amended February 7th, 1920.

Title

1.—The title of the Society shall be THE BOURNEMOUTH NATURAL SCIENCE SOCIETY.

Objects

2.—The objects of the Society shall be the promotion of the study of Science in all its branches, by means of Lectures, Field Meetings, the Reading and Discussion of Papers, and the formation of Sections of its members devoted to any particular branch of the Society's work, or by any other means that the governing body of the Society shall deem advisable.

3.—The Society shall encourage the making of reports on any plant, animal, or object of interest, and where the Society may deem it necessary, shall take such steps as may be advisable to secure any such plant, animal, or object of interest from injury, extinction or destruction.

Members

4.—The Society shall consist of Ordinary, Life, Associate, and Honorary Members.

Council

5.—There shall be a Council of the Society consisting of the Hon. Treasurer, one or more Secretaries, Honorary or otherwise, the Vice-Presidents who have filled the office of President, the Hon. Librarian, the Hon. Editor, the Hon. Curator, the Chairmen of Sections and twelve elected Members.

The Council shall have the general management of the Society. At all Meetings of the Council, five shall form a Quorum. The Council shall elect their own Chairman and Deputy-Chairman for the Year, and shall have power to fill up any vacancies in their number which may occur from time to time. The Council shall have power to appoint Committees to deal with any business that may be delegated to them.

The Chairman, or in his absence the Deputy Chairman, at all Meetings of the Council shall have an original and a casting vote.

The Council shall have the control of the Funds of the Society.

Executive Officers

6.—The Executive Officers of the Society shall consist of the Chairman and Deputy Chairman of Council, Hon. Treasurer, and one or more Secretaries, Honorary or otherwise.

7.—The Ordinary, Life, and Associate Members of the Society shall be proposed by an existing Member, and seconded by another existing Member, and notice shall be sent to one of the Secretaries of the Society of the names and address of the nominee, and the names of the proposer and seconder. Any such proposed new Member shall be voted for at the next ensuing Council Meeting, and if two-thirds of the Council present and voting shall vote for the proposed new member, such candidate shall become a Member upon payment of the Annual Subscription, and shall receive a card of membership (not transferable) entitling him or her to attend the Meetings of the Society. Members joining during August and September shall be given a card of membership to September 30th of the following year.

Ordinary Members.

8.—Ordinary Members shall pay an Annual Subscription of Ten Shillings, due on the first day of October in each Year. The Annual Subscription for Adult Members of the same family, not exceeding four and residing in the same house, shall be Twenty Shillings, each Member being elected in the usual manner and each receiving a card of membership. In the case of Members elected after February 7th, 1920, the above mentioned rate of subscription shall be doubled.

9.—The Subscription for Life Members shall be Five Guineas. Any Ordinary Member who shall have commuted his Subscription, as provided for in this Rule, shall become a Life Member, but shall not by reason thereof have any different rights from those of an Ordinary Member. In the case of Members elected after February 7th, 1920, the above mentioned rate of subscription shall be doubled. Life Members.

10.—Associate Members are those who by payment of an Annual Subscription of Two Shillings and Sixpence are entitled to attend all the General Meetings and Excursions of the Society. They also have the privilege of attending the Meetings and Excursions of one particular Section they may select at the time of their Election, or at the commencement of each Session, their choice being notified by them to the Hon. Treasurer. The following are entitled to become Associate Members on Election by the Council :— Associate Members.

(a) Teachers in schools who are still engaged in the active duties of their profession.

(b) Persons, who in the opinion of the Council, although unable to pay the fee for full membership, are by their acknowledged scientific tastes or attainments, likely to prove useful working Members of the Society.

On further payment of Two Shillings and Sixpence, Associate Members are admitted to the Meetings and Excursions of all the Sections. In the case of Members elected after February 7th, 1920, the above mentioned rates of subscription shall be doubled.

Associate Members shall have no power of voting on the affairs of the Society, or of holding office.

11.—Any person who is either distinguished in Science or has rendered any special service to the Society, may be elected an Hon. Member. Such Hon. Members shall be proposed and elected in the same way as Ordinary Members. Honorary Members

12.—Any Visitors introduced by a Member or producing a Member's card, may be admitted to any Meeting or Excursion of the Society on entering their names and that of the introducing Member in the Society's Visitors' Book. Such privilege not to be granted more than twice to any one person in each Session. Visitors

On the recommendation of the Council or Committee authorised by it, Visitors to Bournemouth desirous of attending the Meetings or Excursions of the Society, may obtain a ticket of admission for the Winter or the Summer Meetings or Excursions at a charge of Seven Shillings and Sixpence. Application to be made to the Hon. Secretary for submission to the Council or Committee authorised by it.

13.—Any Members whose subscriptions are unpaid at the end of the financial year (September 30th), on notice to that effect in writing having been given to them by the Hon. Treasurer, shall be reported to the Council, who shall have the power of removing their names from the list of members.

14.—Resignations should be in writing, and addressed to one of the Hon. Secretaries, and until such are received by them, Members remain liable for their subscriptions.

15.—The power of expulsion of a Member from the Society for objectionable conduct shall be vested in a General Meeting of the Society, provided the Council has caused special notice to be given on the circular convening the Meeting, and that two-thirds of those present and voting agree thereto.

16.—The Council shall arrange all Lectures, Papers, Demonstrations and Exhibitions of Specimens, etc., both for the General and Sectional Meetings of the Society, and shall decide upon all General and Sectional Excursions.

Sections

17.—The Council shall have power to form any Section or Sub-Section, to consist of not less than six Members, for the study of any special subject which the Council may deem within the scope of the Society's work. They shall annually appoint the Chairman of any such Section or Sub-Section on the nomination of that Section or Sub-Section.

A Section shall consist of those Members who attend in each year not less than three meetings of such Section.

The Chairman of each Section shall appoint a Secretary, who in addition to the ordinary secretarial duties shall keep a list of the Members of the Section.

Sectional Meetings

18.—Each Sectional Chairman shall be responsible for the preparation and arrangement of each Sectional Meeting and Excursion, and shall submit details of the same to the Hon. Secretary for submission to the next ensuing Meeting of the Council. He shall submit accounts of costs incurred by him to the Hon. Treasurer, after each Meeting or Excursion, who shall lay the same before the Council at their next ensuing Meeting. At the first Meeting of each Section or Sub-Section in the Year, after the Annual Meeting, such Section or Sub-Section shall nominate its Chairman.

19. A book for each Section shall be provided by the Secretaries to be kept at the Society's Room; each Chairman of Section, or his Secretary shall enter therein an account of each Meeting, with number of Members attending, and notes of any matters of interest observed or discussed. Such book to be presented at each Meeting of the Council. Every Chairman of Section shall report at each Meeting of the Council. Every Chairman of Section shall report as to the work of his section at the Annual Meeting of the Society.

20.—Any Members of the Council other than Ex-officio Members who shall have failed to attend half the Meetings of the Council held in any one year, provided that such non-attendance be not caused by illness or absence abroad, shall not be eligible for re-election, except by desire of the Members present at the Annual Meeting.

The President

21.—The President need not necessarily be selected from Members of the Society, and shall be elected annually. He shall deliver an Address at as early a date in the Winter Session as can be arranged.

Vice-Presidents

22.—Any Member of the Society who, in the opinion of the Council, shall have rendered distinguished service to Science or to the Society, shall be eligible for election as a Vice-President at the Annual Meeting, as long as he or she remains a Member of the Society.

23.—Each of the Vice-Presidents in rotation shall be requested to act as Chairman at the General Meetings of the Society.

Secretaries

24.—The Secretaries shall perform all the usual secretarial work; shall keep minutes of all Council Meetings, and the Annual Meeting, and a synopsis of all General Meetings. They shall cause a programme of each General Meeting to be sent to every Member seven day at least before each such Meeting. They shall make all preparations for carrying out all General Meetings and General Excursions, at which they shall receive from each Member his or her share of the day's expenses, and therefrom defray all costs of the Meeting. Any surplus of such collection shall go to the General Fund, and any deficit be defrayed out of that fund. They shall keep an account of all out-of-pocket expenses incurred in arranging Meetings and otherwise. They shall give notice of their election to all new members, they shall furnish a copy of the Annual Report to all Members who have paid their subscription, to Honorary Members, and to any such Scientific Societies as the Council may from time to time appoint to receive them.

Treasurer

25.—The Honorary Treasurer shall have the custody of the General Funds of the Society. He shall prepare a Financial Statement at the end of each Financial Year to be presented to the Council at the Meeting next preceding the Annual Meeting. He shall receive and acknowledge all Subscriptions, and shall issue tickets of Membership to all persons who are duly elected and have paid their Subscriptions. He shall bring before the Council any accounts that are due for payment. After presentation of the Balance Sheet to the Council, he shall submit it to the Auditors and lastly to the Annual Meeting of the Society.

26.—At the Annual Meeting and at all General Meetings of the Society, not less than ten Members shall form a quorum.

Annual Meeting

27.—At the Annual Meeting, which shall be held in the month of October, the President, the Executive Officers (except the Chairman and Deputy Chairman of the Council), the Hon. Librarian, Hon. Editor, Hon. Curator, twelve Members of Council and two Auditors for the ensuing year shall be elected (either Auditor having the power to audit the accounts in the unavoidable absence of the other). At this Meeting the Council's Report of the past year, together with those of the Chairmen of Sections, and the Hon. Treasurer's statement of accounts, duly signed by the Auditors, shall be submitted.

28.—Alteration in the Rules shall be sanctioned by a majority of not less than two-thirds of the Members present and voting at the Annual Meeting, or at a Special Meeting called for that purpose, and no alterations shall otherwise be made.

29.—Notice convening an Annual or Special Meeting, together with any proposed alterations in the Rules, shall be given to Members at least seven clear days before such Meeting be held. Notice of General Meetings, and Council Meetings (if possible) shall be given at least seven clear days beforehand.

30.—On a written requisition, signed by at least five Members of the Society, the Council shall call a Special Meeting to consider any question as to the affairs of the Society, such Meeting to be called within three weeks of the receipt of the requisition, and at least seven days' notice shall be given to the Members. At such Meeting no other business than that mentioned on the requisition, and on the notice convening such Meeting, shall be considered.

Annual Meeting, 1920.

THE SEVENTEENTH Annual Meeting was held at 39 Christchurch Road, on Saturday, October 9th, 1920. 70 Members were present.

Sir David Morris, K.C.M.G., Chairman of the Council, presided.

Field Marshal Lord Grenfell, President of the Society, was present.

The minutes of the last meeting were read and passed.

The Council's Report for the past year was read. It reported that the year 1919-20 marked an epoch in the history of the Society. Since its re-formation in 1903 it had been housed in hired rooms in different parts of the town, 6½ years being spent in the Municipal College, but it is now established in convenient Freehold premises at 39, Christchurch Road, consisting of a House standing in a garden of over an acre. It has a Lecture Hall, a Museum, Library, and a Reading Room. Five Rooms have been let to other Societies. The premises were opened on February 7th, 1920, by an "At Home" given by the President and Council of the Society.

The Membership was 524 on 30th September as against 514 on the same date last year.

The Hon. Treasurer's statement of accounts was then read, showing Receipts £474 14s. 6d., and £114 8s. 11d. brought forward from last year, making a total of £589 3s. 5d. Payments £415 10s. 8d., leaving a balance of £173 12s. 9d. The accounts for Furnishing and the Debenture Account were also read. The Report and Accounts were adopted.

The Chairmen of Sections then gave their Reports of the work done in their Sections during the year.

The Rev. C. O. S. Hatton gave the Report of the Library Committee, and also of the Housing and Finance Committee.

A vote of thanks to the retiring President, Lord Grenfell, proposed by Rev. Hy. Shaen Solly, seconded by Mr. A. C. Whyte, was carried unanimously, and he was elected a Vice-President.

The Chairman proposed the election of Lieut.-Col. Sir David Prain, C.M.G., C.I.E., F.R.S., an eminent Botanist, Director of the Royal Gardens at Kew, as President of the Society for 1920-21; this was seconded by Mr. J. H. Ralph Smythe, and carried with acclamation.

The Vice-Presidents were re-elected, and the officers and Council for the year 1920-21 were elected, proposed by Rev. R. C. Lynch-Blosse, M.A., and seconded by Mr. J. W. Savage.

Mr. E. Bicker and Mr. C. H. Blackett were re-elected Hon. Auditors, and a vote of thanks was accorded to them for their past services.

A vote of thanks to the Chairman closed the Meeting.

Council's Report for 1919-20.

THE Seventeenth Annual Report of the Council is again a very satisfactory one. There has been an increase in the Membership from 514 on September 30th last year to 524 on the same day this year.

During the year General and other Meetings have been held as follows:—

- Annual Meeting
- At Home
- Special General Meeting
- Presidential Address
- Garden Party
- 6 General Lectures
- 43 Sectional do. and other Meetings
- 5 General Excursions
- 21 Sectional do.

making a total of 80 Meetings and Excursions.

Among the Sectional Lectures, one given by Dr. Wm. Gosse, D.P.H., on "Pathogenic Bacteria," illustrated by Cultures, Lantern Slides and Photographic Films, deserves special notice, and also two on the important subject of "Rats and the Rat Problem," by Dr. F. G. Penrose, F.R.C.P., F.Z.S., M.B.O.U.

Among the General Excursions, that to General Pitt-Rivers' Museum is worthy of note, as the Society had never before visited King John's House, special permission having been given on this occasion.

Of the 21 Sectional Excursions 17 were carried out by the Botanical Section, as well as 4 small Excursions exclusively for Field work.

The General Lectures were as follows:—

1920.

*April 10.—Presidential Address by Field Marshal Lord Grenfell of Kilvey, G.C.B., G.C.M.G., LL.D., F.S.A. Subject: "The Island of Malta, its occupation by the Knights of St. John and eventually its conquest by Napoleon."

1919.

*Nov. 15.—"Japan—the Land where the Day breaks, as I have seen it," by Mr. Jas. E. Liddiard, F.R.G.S.

Nov. 26.—"Two years in and around Salonica," by Dr. E. Burstal, late Major R.A.M.C.

1920.

*Jan. 14.—"Through the Norwegian Fjords to the Midnight Sun and the North Cape," by the Rev. W. H. Windle Cooper, M.A., F.R.G.S.

*Feb. 18.—"The Japanese as I know them," by Mr. Jas. E. Liddiard, F.R.G.S.

*Mar. 13.—"With the Armoured Car Unit across Persia," by Mr. Maitland B. Scott, F.R.G.S.
Mar. 20.—"The early History of Plant Life on Land," by Dr. Dukinfield H. Scott, M.A., F.R.S., F.L.S., F.G.S.
*Illustrated by lantern slides.

The Sectional Lectures and Meetings were:—

In the Archæological and Historical Section.

1919.
Nov. 8.—"Excavations on a Roman Pottery Site in the New Forest," by Mr. Heywood Sumner, F.S.A.
Nov. 11.—"The Antiquities of Peru and South America," by the Rev. F. A. Allen, M.A.

1920.
Feb. 19.—"A Brief Sketch of Indian History," by Mr. A. B. Scott, C.I.E.
Feb. 27.—"The Black Death in Hants and Dorset," by Rev. Canon Fletcher, M.A.
*Mar. 25.—"Early Man in Crete and Egypt," by Rev. H. Shaen Solly, M.A.
April 15.—"Report of the Survey of the Bournemouth Area," by Mr. Heywood Sumner, F.S.A., and Mr. W. G. Wallace.
April 22.—Notes by Rev. Hy. Shaen Solly, M.A., on places of Archæological interest within the limits of an Excursion.

1920. In the Astronomical Section.

April 24.—Opening Meeting.
June 3.—"Astronomy in the Poetry of Wordsworth," by Col. E. E. Markwick, C.B., C.B.E., F.R.A.S.

In the Botanical Section.

1919.
Nov. 18.—"The Origin of our Cereals," by Miss Ida M. Roper, F.L.S.

1920.
Jan. 3.—"British Mosses," by Mr. J. F. Rayner, F.R.H.S., M.B. Myc. Soc.

In the Entomological Section.

1919.
Nov. 13.—Exhibition of Objects of Interest.
Dec. 4.—Exhibition of Fritillaries of the Genus "Dryas," by Mr. W. Parkinson Curtis, F.E.S.

1920.
Jan. 15.—Exhibition of Objects of Interest.
Feb. 19.— Do. by Mr. W. Parkinson Curtis, F.E.S.
Mar. 18.— Do.

1919. In the Geographical Section.

*Oct. 22.—"Climbing recollections in Switzerland and the Tyrol," by Mr. Hy. Backhouse, F.R.H.S.
Nov. 5.—"Negroes and Negrittos, and some interesting facts concerning them," by Rev. F. A. Allen, M.A.

1920.
Feb. 11.—"Some Wessex Streams and the tales they tell," by Rev. A. C. Almack, M.A.
Feb. 28.—"Sketch of the principal Typographical Features of India," by Mr. G. B. Scott, C.I.E.
*Mar. 3.—"Reminiscences of Relief Work in Palestine," by Mr. Risdon Bennett, M.A.
*April 7.—"Some Physical Features of India," by Mr. G. B. Scott, C.I.E.

In the Microscopical Section.

1919.

*Dec. 3.—Some Minute Marvels of Nature," by Mr. F. B. Taylor, B.A.

1920.

Feb. 12.—Exhibition of Objects of Interest.

March 17.—Investigation of Pond Life.

April 21.—Examination of Living Material.

In the Photographic and Record Section.

1919.

*Dec. 17.—"Animal Studies," by Mr. H. W. Laidlay.

1920.

*Jan. 17.—"What Photography did in the Great War," by Mr. J. Thomas, late R.N.A.S.

*Feb. 14.—"Some Minor Fishing Industries," by Mr. Chas. Hussey.

*March 6.—"The Year's Work," by Mr. R. Y. Banks.

*March 27.—"Some Portions of Exeter Cathedral," by Mr. E. Dodshon, LL.B.

*April 28.—Exhibition of "Amateur Photographer and Photography," prize slides 1919, by Mr. R. Y. Banks.

In the Physical Section.

1919.

*Dec. 13.—"Sound," by Mr. Hubert Painter, B.Sc., F.C.S.

1920.

*Feb. 21.—"The Spectroscope and some of its Revelations," by Mr. T. Templeton Smith, B.Sc.

*April 17.—"The Manufacture and Uses of Coal Gas," by Mr. H. E. Thorpe, B.Sc.

In the Zoological Section.

1919.

*Dec. 10.—"Pathogenic Bacteria," by Dr. Wm. Gosse, D.P.H. Illustrated by Cultures, Lantern Slides and Photographic Films.

1920.

*Jan. 21.—"Rats and the Rat Problem," by Dr. F. G. Penrose, F.R.C.P., F.Z.S., M.B.O.U.

*Feb. 16.—"The Rat Problem," do.

*Feb. 20.—"A New Species of Isopod," by Mr. J. Omer Cooper.

*Illustrated by Lantern Slides.

The General Excursions and their Conductors were:—

1920.

May 22.—Wimborne St. Giles and Knowlton, Sir Daniel Morris, K.C.M.G., etc.

June 16.—Stonehenge, Rev. Hy. Shaen Solly, M.A., and Mr. R. A. de Paiva.

July 8.—Sherborne, Col. Sir Wm. Watts, K.C.B., and Mr. W. B. Wildman.

Aug. 7.—General Pitt-Rivers' Museum, Larmer Tree Grounds, and King John's House, Mr. J. H. Ralph Smythe, J.P.

Sept. 8.—Canford Manor, Mr. J. H. Ralph Smythe, J.P.

The Excursions in the various Sections and their Conductors were:—

1919.

Oct. 23.—Fungus Foray at Hinton Admiral, Mr. J. F. Rayner, F.R.H.S., M.B. Myc. Soc. (Botanical and Photographical).

1920.

April 29.—Wareham, Stoborough and Holme Lane, Mr. R. V. Sherring, F.L.S. (Botanical).

May 1.—Lulworth Cove, Mr. W. Munn Rankin, M.Sc., B.Sc. (Geological).

May 6.—Sway, Rev. C. O. S. Hatton, B.A., F.L.S. (Botanical).
May 12.—St. Catherine's Hill and Dudsbury Camp, Mr. Heywood Sumner, F.S.A. (Archæological and Historical).
May 15.—West Moors, Miss S. G. Rooke (Botanical).
May 20.—Littlesea (western side), Mr. R. V. Sherring, F.L.S. (Botanical).
May 29.—Christchurch Meadows, Rev. C. O. S. Hatton, B.A., F.L.S. (Botanical).
June 9.—Hinton Admiral, Rev. C. O. S. Hatton, B.A., F.L.S. (Botanical).
June 12.—Cowgrove, Wimborne, Mr. R. V. Sherring, F.L.S. (Botanical).
June 19.—Swanage, Mr. R. V. Sherring, F.L.S. (Botanical).
June 24.—Burton, Rev. C. O. S. Hatton, B.A., F.L.S. (Botanical).
June 29.—Ackling Dyke and neighbouring places, Rev. Hy. Shaen Solly, M.A., and Mr. Hy. J. Ellis (Archæological and Historical).
July 3.—Breamore, Rev. C. O. S. Hatton, B.A., F.L.S. (Botanical).
July 8.—Redhorn and Poole Harbour, Mr. R. V. Sherring, F.L.S. (Botanical).
July 17.—Verwood and Edmondsham, Rev. E. F. Linton, M.A., F.L.S. (Botanical).
July 20.—British and Roman Camps on Hod Hill, Mr. Heywood Sumner, F.S.A., and Rev. Hy. Shaen Solly, M.A. (Archæological and Historical).
Aug. 5.—Milton Rectory Garden, Rev. C. O. S. Hatton, B.A., F.L.S. (Botanical).
Aug. 26.—Hengistbury Head, Rev. C. O. S. Hatton, B.A., F.L.S. (Botanical).
Sept. 11.—Corfe Castle and Threshire Heath, Miss S. G. Rooke, (Botanical).
Sept. 25.—Fungus Foray at Holmsley, Mr. F. J. Rayner, F.R.H.S., M.B. Myc. Soc. (Botanical).

The year 1919-20 marks an epoch in the history of the Society. Since the formation of the Society in 1903, it had been housed in hired rooms in different parts of the town, and for six and a half years it occupied a room in the Municipal College. As the Education Authorities required this, it became necessary to look for other quarters. After considerable enquiry, suitable and convenient Freehold premises were found at 39, Christchurch Road, affording accommodation for a Museum for the Society's collections, a Library, and for Lectures and other Meetings. A separate Reading Room has also been provided for the use of Members.

Five rooms have been let to the Bournemouth Medical Society, the Royal Colonial Institute, the League of Remembrance, and the Girl Guides. The property consists of a well-built House standing in its own grounds of over an acre, situated on the main tram route and close to a regular stopping place. The lease was first purchased, and then the freehold was secured from Sir Geo. Meyrick. The necessary funds were raised by Debentures. The Society is greatly indebted to the Rev. C. O. S. Hatton, Mr. Hy. Backhouse, Mr. Geo. Brumell, and the members of the Housing Committee for successfully carrying out the arrangements for the purchase of the Property.

In order to provide for the extra expenses connected with removal, furnishing, etc., an appeal was made to the Members voluntarily to increase their subscriptions for three years; this appeal met with a response of £130 17s. 6d.

The premises were formally opened on Saturday, February 7th, by an "At Home," at which nearly 250 Members were received and entertained at tea by the President, Field Marshal Lord Grenfell, the Chairman of the Council, Sir Daniel Morris, and the Council of the Society.

A Special General Meeting was afterwards held in the large Lecture Hall, when Mr. Hatton explained the scheme for the issue of Debentures, and he and Mr. Brumell showed the advisability of doubling the subscriptions to new Members as from February 7th, 1920. Both matters were approved and confirmed by the Meeting.

On Saturday, July 10th, it had been intended to give a Garden Party in the Society's Garden, in conjunction with the Literature and Art Association, at which a Costume Recital entitled "Guinevere and Arthur" should be presented on the Lawn, but in consequence of the wet weather, the arrangements had to be considerably altered. Tea was served in the Society's Lecture Hall, and the Play was given in the large Hall at the Municipal College.

At the last Annual Meeting Field Marshal Lord Grenfell, of Kilvey, G.C.B., G.C.M.G., LL.D., F.S.A., was unanimously re-elected President for 1919-20. He gave his Presidential Address on April 10th, the subject being "The Island of Malta, its occupation by the Knights of St. John, and eventually its conquest by Napoleon."

It is a pleasure to be able to state that Lieut.-Colonel Sir David Prain, C.M.G., C.I.E., LL.D., F.R.S., Director of the Royal Gardens at Kew, has kindly consented to allow himself to be nominated as President of the Society for 1920-21.

In response to the wish of several Members, an Astronomical Section has been formed, and Colonel E. E. Markwick, C.B., C.B.E., F.R.A.S., a former Hon. Secretary of the Society, appointed Chairman.

The Meeting of the British Association took place at Cardiff on August 24th to 28th. The Society was represented by Sir Daniel Morris, who also served as Delegate at the Conference of Corresponding Societies.

A survey of the Ancient Earthworks of the Bournemouth Area has been made by Mr. Heywood Sumner, F.S.A., and Mr. W. G. Wallace, and the results of their investigations have been recorded in a Report presented to the Archæological Section, and also entered on 6-inch Ordnance Maps, the property of the Society.

The display of Wild Flowers at the Public Library has been successfully continued throughout the year by several Members of the Botanical Section. These Exhibitions are much appreciated, and are of considerable educational value.

The Library of the Society is being re-arranged, and it is hoped shortly to issue a Catalogue.

The Society has lost a valued Member in Mr. W. Munn Rankin, M.Sc., B.Sc., who has left Bournemouth to take the duties of Principal of the Technical College at Burnley. He was a Member for 8 years, a Member of Council 7 years, Chairman of Council 2 years, Hon. Librarian 2 years, and Chairman of the Geological Section 1 year; he frequently gave Lectures on Geology and Physical Geography, Zoology and Botany. The Council has unanimously elected him an Honorary Member in recognition of his past services.

The Council deeply regrets to record the loss by death of Mr. George de Castro, M.R.C.S. He had been a Member for 10 years, a Member of Council 5 years, and Chairman of the Geographical Section 5 years. He was Hon. Secretary and Treasurer of the Bournemouth Branch of the Royal Colonial Institute. By his personality and courteous manner he had universally endeared himself to all the Members. An obituary notice appears in Vol. XI. of the Proceedings.

The Society has also suffered the loss by death of several other Members during the year, namely, Lady Russell Cotes, Mr. J. T. Arundel, F.R.G.S., Rev. Moyle Rogers, F.L.S., an eminent British Botanist; Mr. F. I. Cooke, for two years Hon. Librarian; Rev. T. Russell-Wright, M.A., Mr. Donald W. Preston, Mr. J. W. Barrington, Mr. H. Bartle, Mr. Archibald Kenrick, Mr. Thos. Thompson, Mr. C. H. H. Walker, Mrs. Holgate, Mr. Chas. Hussey, and Mr. W. Atkins.

Among the principal donations to the Society, besides several books mentioned in the Report of the Library Committee, were a fine French Empire chair, presented by the President, Lord Grenfell; an excellent framed portrait of Linnæus, presented by Mr. A. D. George; a valuable collection of plants for the Herbarium collected and arranged by the late Dr. George Lloyd, to which Sir J. B. Hooker contributed several specimens, presented by Mrs. Lloyd; a table and chair by Mrs. Curme and her daughter, Mrs. Pattinson; a collection of Australian weapons, presented by Mr. Leonard Browne; Rubbings of Brasses, by Rev. W. H. Windle Cooper; a lace bark whip and several other objects, by Mrs. J. P. Matthews; a small collection of shells in a cabinet, by Miss Wetherell; a large cabinet with a collection of shells and other objects, by Mr. A. Whiting; a book rest of Coromandel wood ornamented with two Wedgwood medallions, presented by Mr. A. Gray; typical examples of Roman Pottery, discovered in the New Forest by Mr. Heywood Sumner; samples of Roman

Pottery from Upchurch, and a small collection of Roman coins by Mr. H. J. Ellis; Diagrams of Stonehenge drawn by Col. E. E. Markwick; a table with suitable drawers for storing Maps, Drawings, etc., presented by Mr. Hy. J. Ellis; Specimens for the Herbarium, by Mr. R. V. Sherring; Kiwis and Green Owls (rare New Zealand birds) in glass cases, presented by the late Mr. George de Castro, through Mrs. de Castro; an interesting Geological collection by Rev. E. F. Linton; and the "Times" Edition of the "Encyclopædia Britannica" in a revolving Book-case, by Rev. E. J. Douglas Simpson.

In conclusion, the Council desires to express its best thanks to all those who have given Lectures and conducted Excursions, all who have helped in any way to promote the interests of the Society, and especially owners and occupiers who have kindly given permission to visit places of interest.

Report of Summer Excursions, 1920.

Wimborne St. Giles and Knowlton.

The first General Excursion of the Season was made on May 22nd by 65 Members to Wimborne St. Giles, the seat of the Earl of Shaftesbury, and to Knowlton. Sir Daniel Morris, K.C.M.G., was the Conductor.

Arriving shortly after noon they were met by the Rector, the Rev. J. A. Bouquet, who showed the Church of St. Giles. It had been burnt down in 1908 and rebuilt in 1910. A conspicuous object was the tomb, under a handsome canopy, and the effigies of Sir Anthony and his wife, and the kneeling figure of their only daughter and sole heiress.

After seeing a very fine Tulip tree in the Rectory Garden, and an ancient yew tree, about 22ft. in girth, in the churchyard, the party had lunch in the grounds of St. Giles House, and Sir Daniel Morris pointed out some fine examples of the Oriental Plane and other trees.

The chief Arboreal feature of the Park was the noble avenue of Beeches, about three quarters of a mile in length. The remarkable shell grotto was another object of interest. It is composed chiefly of Indian shells, arranged in a most artistic manner about 150 years ago for the fifth Earl and Countess.

The old ruined Church of Knowlton was the next point of interest visited. Mr. Heywood Sumner, F.S.A., gave a short account of the noted Earthwork, and of three others near by, and compared them with others in different parts of the country. He was followed by the Rev. Hy. Shaen Solly, M.A., who spoke of some of the customs and ceremonies connected with the ritual of ancient religious worship.

Sherborne. On July 8th an Excursion was made to Sherborne, when in spite of very heavy rain 58 Members started in Motor Char-a-bancs, and after about an hour were rewarded with fairly fine weather. Mr. W. B. Wildman, the noted historian of Sherborne, conducted the Excursion.

The ruins of the Old Castle were first visited, where Mr. Wildman outlined its history from its building about 1120 A.D., through two Sieges in the Civil War, to its " slighting " by order of the Parliament in 1645 after Naseby.

In the Abbey Church Mr. Wildman gave a very interesting account of the building from its foundation in 765, as the Cathedral Church of St. Ealdhelm, the first Bishop of Western or Newer Wessex. It became the Abbey Church of a Benedictine Monastery in 998 till the Abbey was dissolved in 1539. With the exception of a small part of the west front, there is not a single piece of wall which was standing in 1107. In the 15th Century the Choir was taken down and rebuilt by Abbot Bradford, and the Nave was restored by Abbot Rampsham or Ramson.

Of all the institutions in Sherborne, the one which has kept its dwelling place longest, which is to this day what it was before Wessex became one with England, is Sherborne School. It began with the Cathedral in 705, and lived through the dissolution of the Monastery in 1539 to get a Charter and a new endowment from Edward VI. in 1550.

The party was conducted over the School Buildings. The Library possesses the original accounts of the School Estates from 1553, and the Minute Book of the Governors from 1502 to the present day, and there is a splendid collection of the great books of the 17th Century.

The return journey was made via Dorchester and Bere Regis, passing Cerne Abbas.

Stonehenge. On June 16th 112 Members, conducted by Rev. Hy. Shaen Solly, M.A., drove to Stonehenge. While assembled in the great circle Col. E. E. Markwick, C.B., C.B.E., F.R.A.S., a former Hon. Secretary of the Society, gave some notes on the Astronomical theory of the origin of Stonehenge. He described the formation of the circles and the stones of which they were composed, and he showed that the obliquity of the ecliptic, otherwise the Sun's maximum distance from the Equator, is slowly diminishing as time goes on; the diminution per century, as rigorously calculated, is 47″ per century. Drawings were exhibited giving a plan of Stonehenge " as it was," the different nature of the stones being indicated by colours, and a plan showing the azimuth of the Avenue and of the Sun's rising point in relation to the movement. Archæologists fix on a date for the erection of Stonehenge closely corresponding to the Astronomical one, and thus both Archæology and Astronomy agree in the stupendous antiquity of our National monument.

The Rev. H. S. Solly said that 1700 B.C. was a probable date for the construction of the building, and this date was confirmed by the discovery of a stain of copper oxide on one of the stones beneath the surface of the ground, which suggested a date towards the end of the old Stone Age, when some use was being made of copper. He described how the huge stones were erected, and drew attention to the tenons by which the horizontal stones were fixed to the uprights.

Tea was taken at Sutton's at Salisbury. Bournemouth was reached about 7 o'clock.

General Pitt-Rivers' Museum, Larmer Tree Grounds, and King John's House.

On August 7th an Excursion was made by 110 Members to General Pitt-Rivers' Museum, the Larmer Tree Grounds, and King John's House at Tollard Royal. They were conducted by Mr. J. H. Ralph Smythe, J.P.

The first place visited was the Larmer Tree Grounds, where King John's Hunt is supposed to have met, and the Cranborne Chase Courts were held. The meaning of the word Larmer is not known, but the syllable " mer " is from mere, a boundary. The original Larmer Tree was a Wych Elm, but it has been replaced by an oak. It stands at the border of three parishes, Farnham, Tollard Farnham and Tollard Royal, and of two counties, Dorset and Wilts.

The party then drove to see King John's House, for which special permission had been kindly given by Major Ashley Corbet, who resides there. Mr. Wm. Dale, F.S.A., gave some account of it. King John's House at Tollard Royal is of very great interest owing to the scarcity of domestic buildings of the period. Of Castles we have plenty remaining, but the ordinary dwelling houses of the time have nearly all disappeared. According to King John's Itinerary he was at Cranborne nine times from 1200 to 1213.

The residence itself consisted of several detached buildings, kitchen, and several servants' quarters, and also quarters for a chaplain. The apartment known as the King's Chamber survives, fairly perfect, though somewhat difficult to make out owing to additions made in Tudor times. It is a chamber 38ft. by 16ft., whose extent can best be seen by viewing it from the garden front. Inside it is of two floors, and the chambers are divided nearly in two by Tudor fireplaces and chimneys, and some Tudor windows have been inserted. The upper chamber was doubtless the " Solar," and that occupied by the King. Here the original windows remaining are of two lights with stone seats in them.

The chamber below was that occupied by his Knights, and for security the original windows were only œillets, admitting

little light. The walls of the building are 4 feet thick. There was an aumbrey at one end where the King would keep his valuables. Such furniture as he required, principally beds and cushions, and glass to put in the windows of his room while he stayed, he carried with him.

The remainder of the afternoon was spent at the Museum, in examining the beautifully executed models of the excavations and of the bodies they contained, made by the late General Pitt-Rivers, and very numerous other exhibits.

Canford Manor. The last of the General Excursions was made on Wednesday, September 8th, by 110 Members to Canford Manor, the seat of Lord and Lady Wimborne, under the leadership of Mr. J. H. Ralph Smythe, J.P.

The indoor Tennis Court, of which there are only 29 in this country, was first seen. The Rev. the O'Shea, Vicar of Canford, and Mr. Clements, of the Canford Estate Office, explained the method of playing the ancient Royal game of Tennis, which differs greatly from that of Lawn Tennis.

The church was next seen, where the Vicar gave an address. The date of the dedication of the church is unknown, which fact points to its foundation being of very early date. The chancel was the nave of a Saxon Church. Like many ancient churches it has a slight bend to the right at the Chancel end. The party then assembled in the ancient Kitchen, known as "John o' Gaunt's Kitchen," where Mr. Smythe described how the ancient Manor was constituted. In the midst stood the noble hall or Court, there dwelt the lord; dotted over the Manor were the houses of the freemen, the villeins or serfs and the cotters. The land was apportioned, according to their status, between the lord, the freemen, villeins or serfs and the cotters. It is an interesting fact that a Court is still held once a year at the Manor.

Mr. Smythe traced the history of the possessors of the Manor from Saxon times to 1845, when it was bought by Sir John Josiah Guest, great grandfather of the present Lord Wimborne.

The Members passed into the long Gallery, in which was a very beautiful and valuable collection of old and rare Oriental china, and to the great Hall, the upper part of which is hung with Gobelin Tapestries, representing the four seasons, while the lower portion is panelled with carved oak.

Report of the Housing and Finance Committee.

THE Rev. C. O. S. Hatton congratulated the Society on its financial position. He himself had always been optimistic, but he was quite prepared for a deficit on the current account for the first year or so, instead of which they had a balance of £60 on the year's working.

It must be remembered, however, this was not a full year's working, and there were no charges for repairs or renewals. Also there certainly ought to be a small sinking fund to reduce the Debentures. On the other hand, another room had been let to the Girl Guides, so that for next year the rooms let would bring in an income of £177, and the interest on the Debentures amounted to only £193.

The amount of Debentures authorized was £3,500, but only £3,250 had been raised, and this had proved sufficient to buy the leasehold and freehold of the premises, and a balance was left which should prove sufficient to pay the legal expenses, and there might be a balance of £50. The delay in issuing the Debenture Certificates was due to the time necessary to prepare the Trust Deed, which was work which could not be hurried: it was hoped the Certificates would now be issued in a few weeks.

Several Structural alterations had been made to the building.

Necessary alterations had been made to the Lavatories, Ventilators and new heating stoves put in the Lecture Hall.

It was proposed also to place a screen at the second archway in the Hall, so as to cut off our Library, Reading Room and Lecture Hall from the rest of the house, the reason being that unauthorised persons were constantly found wandering about the premises. The premises would, as before, be open for the use of Members at any time during the day, but they would have to ring for admittance.

An extra room (the one over the Reading Room) had been appropriated for the Herbarium, and some other collections, as an extension of the Museum. If an opportunity to let this room presented itself, the matter would be re-considered.

With regard to the Garden, it was too late last year to do more than cut down some of the trees, but this season it was hoped that some planting might be done.

Summary of Accounts for Year ending 30th September, 1920.

RECEIPTS

		£	s.	d.
Current A/c	Members' Subscriptions	247	17	6
	Voluntary Additions to do.	130	17	6
	Sales of "Natural History of Bournemouth"	4	17	2
	Surplus from Excursions	19	13	11
	Interest on War Loan, less Tax ...	0	17	3
	Donations to Library	3	0	0
	Rent from Tenants	65	1	8
	(A further quarter's rent became due on 1st October)			
	Sundry Receipts	2	9	6
		£474	14	6
	Balance brought forward from last year	114	8	11
		£589	3	5
Furnishing A/c	Donations from Members	184	9	6
	Donation from Royal Colonial Institute	5	5	0
	War Loan Sold (£50 Bond)	45	13	9
	War Savings Certificates Sold (£54) ...	45	3	10
	Sale of Bookcases	25	0	0
	Profit from Teas, to pay for Crockery ...	6	17	8
	Interest on Deposit	1	17	5
		£314	7	2

PAYMENTS

	£	s.	d.
Rent and Hire of Rooms, Ground Rent, Rates and Taxes	77	4	2
Salaries and Wages (including Insurance Stamps)	63	12	2
Printing and Stationery	55	18	10
Vol. XI. of Proceedings	46	12	0
Expenses of Lectures	10	4	2½
Postage	27	17	0
Coal, Gas and Electricity	23	2	7
Subscriptions to other Societies	3	4	6
Insurance	3	4	7
Purchase and Preparation of Natural History Specimens and Photographic Records ...	3	3	0
Library	26	0	2
Expenses of Wild Flower Exhibition ...	1	0	11
Interest on Debentures (less Tax)	65	12	6
Sundry Payments	8	14	0½
	£415	10	8
Balance at Bank	173	12	9
	£589	3	5
Cost of Removal, Furniture, Repairs, Decoration, Fittings, etc.	299	17	2¼
Balance at Bank 10 19 7			
Cash in hands of Treasurer 3 10 4¾			
	14	9	11¾
	£314	7	2

Summary of Accounts for Year ending 30th September, 1920—*continued.*

RECEIPTS	£	s.	d
Debenture A/c Amount Received on Account of Debentures to be hereafter issued ...	3250	0	0
	£3250	0	0

PAYMENTS	£	s.	d.
Deposit on Purchase on A/c of leasehold of 39, Christchurch Road, Bournemouth ...	200	0	0
Further Payments in respect of Purchase of do.	1840	0	0
Architect's Fee	10	2	0
Structural Repairs and Alterations	143	15	10
Deposit on Purchase of Freehold Reversion of 39, Christchurch Road	80	0	0
	£2273	17	10
Balance on Deposit	976	2	2
	£3250	0	0

We have examined the above Account with the Books of the Society, and the Vouchers for payment, and certify the same to be correct.

EDWARD BICKER,
C. H. BLACKETT,
(Hon. Auditors)

Bournemouth, November, 1920.

Library Report.

Owing to the expense of moving into the new premises, only two new books have been purchased for the Library—Pliny's Natural History and Vol. III. of the Cambridge Flora. A considerable number of books have, however, been presented, a list of which is given below, and the Periodicals are now placed in cases in the Reading Room for the use of members.

The books upon the shelves in the Reading Room are for reference only and must not be removed without the consent of the Librarian.

It has been found necessary to keep the door of the Library locked but members can always obtain admission by applying to the caretaker. Members borrowing books are required to fill up the details in the issue book, and when returning books should leave them upon the table, not replace them upon the shelves. A catalogue is in course of preparation and it is hoped to issue it shortly.

Donations between October, 1919, and October, 1920 :—

Rev. W. H. Windle Cooper,	The Church and Science, and the Human Epic.
Col. Markwick,	Various works on Astronomy.
Professor Henslow,	Collection of works on Natural Science, etc.
Miss Alleyne,	Ferns, British and Exotic, by Lowe, 8 vols.
Captain Stevens,	Spherical and Practical Astronomy, 2 vols.
Sir M. Russell-Cotes,	Inter-racial Problems,
	The Japanese Journal, 1903/4-1917/18, 19 parts.
Col. Markwick,	Astronomy in Pope's Poetry.
Mr. H. Backhouse,	Darwin's Cross and Self-fertilisation of Plants.
Dr. Penrose,	Spitta's Microscopy.
Lord Grenfell,	A number of works on Archæology, and on Egyptian Art and Archæology,
	The Life and Exploits of Alexander the Great.
	The Plantagenet Roll of the Blood Royal.
	The Armoury of the Knights of St. John at Valetta, Laking.
	Malta, by Boron and Ryan.
	Pompeiana, by Sir William Gell.
	In all 17 vols.
Rev. J. Douglas Simpson,	The Encyclopædia Britannica, "Times" Ed.
Miss	The Book of Ceylon.

The Peterborough Natural History, Scientific, and Archæological Society has agreed to exchange its Reports, etc., with our Society.

Report of Sir Daniel Morris,

K.C.M.G., D.Sc., LL.D., D.C.L., the Delegate of the Bournemouth Natural Science Society to the meeting of the British Association for the Advancement of Science, held at Cardiff from August 24th to the 28th, 1920.

THE first meeting of the Delegates of corresponding Societies took place on Wednesday, August 25, at 2 p.m., when the Presidential Address was delivered by Mr. T. Shepherd, M.Sc., F.G.S., on "The Evolution of Topographical and Geological Maps." This was illustrated by an interesting series of maps of great value.

The Delegates were afterwards entertained to tea by the Head of the University College (Principal A. H. Trow, D.Sc., F.L.S.), President of the Cardiff Naturalists' Society, and thus a further opportunity was afforded them of examining the exhibition of maps under the guidance of Mr. Shepherd.

The second meeting of the Conference took place on Friday, August 27, when an interesting discussion was opened by Mr. William Whitaker, F.R.S., on "The Status of Local Societies—the means of Developing their objects, of getting new Members, of making Announcements, and Publishing Papers." As Mr. Whitaker had been very closely associated for many years with the working of Local Scientific Societies the suggestions put forward by him for their extended usefulness were received with general approval.

At both meetings of the Conference there was a good attendance of Delegates, and it is proposed that a report of the proceedings will be prepared and published in due course.

In the meantime in accordance with the terms of a resolution adopted by the Conference, the Council of the Association was asked to call a further meeting, to be held in London, at which the officers of Local Societies, as well as Delegates, might be present and discuss in detail the best means for developing the aims and objects of Local Naturalist Societies.

Obituary Notice.

JAMES E. LIDDIARD.

Died—October 10, 1920.

Mr. Liddiard was born in London, and had a varied career. He was in business in Hastings for about 26 years, after this he travelled for about three years through many countries, and then settled at Finchley for seven years. He came to Bournemouth in 1899.

He continued his travels from time to time, and visited practically every country in the world with the exception of Russia,

Palestine, Madagascar and South America, and undertook a great deal of voluntary work for foreign missions.

His experiences gave him plenty of material for the many interesting lectures, which he gave to this Society, as well as throughout the country; in most cases illustrating them with lantern slides.

His membership of this Society, of which he was a Vice-President, dates from 1895. He died very suddenly of heart disease at the age of 80, while taking his usual afternoon walk.

Report of Presidential Address

By Field Marshal LORD GRENFELL OF KILVEY, G.C.B., G.C.M.G., LL.D., F.S.A.

Delivered on 10th April, 1920.

(Printed in the "Guardian"—12th April, 1920.)

THE subject was "The Island of Malta," and it was illustrated by a number of beautiful lantern slides, specially prepared by Mr. R. Y. Banks, Chairman of the Photographic Section.

A map of the Islands of Malta and Gozo was first shown, the President pointing out the position of the town of Valetta, its harbours, defences, etc. He then gave an account of its early history. Phœnician emigrants were supposed to have landed as early as 4000 B.C., and showed that they were an enlightened people by their buildings and highly decorated pottery; they introduced a spirit of enterprise with commerce and ship-building. Traces of Egyptian art found in the island leave no doubt that extensive intercourse with Egyptians existed. Eventually the commercial predominance of the Phœnicians passed to the Carthaginians, who held sway over all the Phœnician Colonies including Malta. Greek arts invaded Phœnicia after 400 B.C. and close relations between Greece and Phœnicia were established. In the second Punic War, 218 B.C., the Romans became masters of the African Sea and its Islands, including Malta, and a higher prosperity, civilisation and commercial prosperity was enjoyed, as evidenced by the large number of Roman coins found there.

Slides were shown of the ruined Temple of Haggia Kim, or Stone of Veneration, constructed about 1500 B.C., in the late Stone Age, of gigantic Megalithic stones, and of some relics which have been removed to the museum, including seven grotesque statuettes, now without heads, supposed to represent the Phœnician Deities.

In the 7th Century the Saracens held possession of Sicily, but in the 11th Century, the period of the Crusades, Count Roger expelled the Saracens and took over the Government of Sicily and annexed Malta to the Crown of Sicily. In 1530 Charles V. gave the islands to the Knights of the Order of St. John of Jerusalem, and to them are due the formidable forts and the splendid churches and beautiful buildings. Twenty-eight Grand Masters reigned during the 250 years the Order remained in Italy. When the Knights arrived in Malta the population was small owing to famine and the depredations of Turkish Corsairs, and they set to work to improve the island, the Turks were driven out later in the year.

Several slides were shown of the interior of the Cathedral of St. John, which is richly decorated, and of the High Altar, built of crystal, coloured marbles and lapis lazuli. The silver rails of one of the chapels escaped being looted by Napoleon, from their

having been covered with black paint. The armoury, two fine sets of armour, a richly ornamented shield, and a magnificent piece of Gobelin tapestry which had been brought to Paris in the time of Louis XIV. were also shown on the screen.

The President then spoke of the Napoleonic invasion. It is probable that Bonaparte contemplated not only capturing Malta and Egypt, but invading India, and seating himself on the throne of the Great Mogul. In June, 1798, Napoleon, who after his successes in Italy, determined on an Eastern policy of conquest, annexed Malta on his way to Egypt, dispersed the Order of the Knights of St. John, exiled the Grand Master, and took over every ecclesiastical and military department.

Bonaparte, who had looted Malta to the extent of over £50,000, clearing the various Churches of all their sacramental plate and beautiful objects, which are described in a catalogue made before his arrival and now deposited with the Dean and Chapter at Notabile, filled the " Orient " with this great treasure. That ship was sunk by Nelson in the Bay of Aboukir, where the hull can be seen from the heights above, and several research companies have been formed to recover the valuables remaining in the wreck. There is little doubt that all the gold and silver was sent up country to be minted into coin before her destruction.

Bonaparte and the French Fleet arrived off Alexandria on the 30th June, three days after Nelson's arrival and departure.

The preparation of the expedition in Paris and Toulon is worthy of careful study, and is admirably described in the pages of De la Jonquière, who twenty years ago studied the question of the attack on Malta from the military and naval point of view.

The last Grand Master, Hompesch, was weak and incapable. The decadence of once glorious Order was nearly complete, and this incompetent man was surrounded by spies and enemies, and while the Revolutionary spirit was fostered and spread, and he had even restricted the defence to the fortified town and harbour, the strength of the fortress was so great, that it could easily have been held until relieved by Nelson.

In the library at Valetta, Lord Grenfell found an unpublished letter of Nelson's stating that he would make all possible despatch for his squadron to Malta, to prevent the island from falling into the hands of the French, and desiring Hompesch to assemble all his galleys and ships of war to form a junction with him when he appeared off Malta, he adds no time must be lost in destroying the French Fleet. This letter is dated 20th June, 1798. While on his way to Malta he met a galley which stated that the town had just been taken and the forts garrisoned by the French. Nelson returned to Syracuse, but soon had his revenge in the Battle of The Nile. Bonaparte eventually evacuated Egypt, and after a two years siege Malta was retaken, the Maltese rising against the French. An English blockade was established, and the capitulation took place, and in 1801 the British Flag was hoisted in Malta.

A Selection from the Lectures and Papers Given before the Society.

The Early History of Plant Life on Land.

Summary of Lecture by

Dr. Dukinfield H. Scott, M.A., PH.D., F.R.S., F.L.S., F.G.S.

(Delivered March 20th, 1920).

"THE Beginnings of Botany are in the Sea." These are the first words of a recent able essay by my friend, Dr. A. H. Church, of Oxford, on "Thallassiophyta and the sub-aerial transmigration." The remark is doubtless true, for all the evidence, both from animal and plant fossils, goes to show that life in the sea preceded life on land. There is no more impressive sight to a botanist than the luxuriant marine vegetation revealed to us when the great Oarweed meadows are exposed to view at a low spring tide.

We must not, however, assume, that when plant-life started, the whole surface of the earth was necessarily covered by sea. Some authorities hold that the crust of the earth had already been thrown into folds, giving rise to elevations and depressions, at a time when the water vapour had not yet condensed. As M. Berget, for example, says in his book: "The Earth, its Life and Death" (p. 30). "The hollows received the waters of the primitive seas, and the higher emerging portions constituted the original continents." If this were, so, the early plants would have had the opportunity of going ashore and taking to a land-life, at any time. If, on the other hand, as Dr. Church's hypothesis demands, the primæval sea overspread the whole face of the earth, then the continents must eventually have been slowly elevated out of waters already teeming with life.

The "Plankton" stage came first in the history of life—the phase of free-swimming, microscopic creatures — the only life possible in the assumed world-wide ocean. Then, with the "uprising of undulating continental land-masses to within a range of 100 to 50 fathoms came the first stages of marine "Phytobenthon," i.e., the phase of the rooted seaweeds. They would go on increasing and advancing in organisation until the rocky masses began to break above the surface of the water as the first "dry land."

"Similarly the possage from marine "Phytobenthon" to sub-aerial environment may be based on continual progression of the same factors operating over continental areas."

Thus, the land-flora, on Dr. Church's view, sprang from highly organised seaweeds—much of the progress had already been in the sea, but the transmigrant plants had still to adapt themselves to land conditions. Especially, on the one hand they

had to develope absorbing roots and a water-conducting apparatus, and, on the other, to provide themselves with air-borne instead of water-borne spores.

Now all this happened, on any hypothesis, a very long while ago, that is, very far back in geological time; we know how highly developed the land-plants were in the Coal Period, and long before that. Can we find, preserved in the rocks, any evidence of such a transition from marine to terrestrial life as must once have taken place? It is only the latest work that has thrown any light at all on this question. The interest centres in the earlier Devonian or Old Red Sandstone Flora, the oldest vegetation of the land which has come down to us with its structure, at least in a few happy instances, preserved, so that we can see for ourselves what manner of plants they were.

The most important specimens of all are those discovered a few years ago by Dr. Mackie in the Chert-bed at Rhynie, in Aberdeenshire, and since brilliantly investigated by Dr. Kidston and Dr. Lang. This chert-bed, not later than the Middle Old Red Sandstone, is essentially a fossilised peat, in which the old plants which made the peat are excellently preserved, sometimes still upright, as they grew. The new observations on these Rhynie plants tend to confirm the account given by Sir William Dawson, 60 years ago, of his "Psilophyton," a plant which had often been regarded as more or less mythical.

The first of the new genera to be described is named *Rhynia,* of which two species are now known. One of these, *Rhynia major,* was an extraordinarily simple plant, leafless and rootless; it had an underground rhizome clothed with hairs, and forked aerial stems, growing erect in dense tufts. The whole plant was about 8 inches in height. The internal structure was simple, like the outward form; but the plant possessed a vascular system, consisting of a slender cylindrical strand of wood surrounded by bast, and in the epidermis there were perfectly normal *stomata* (breathing pores), though very few of them. The reproductive organs were long spore-sacs, borne on the ends of the branches, and filled with spores, produced in fours, like those of the higher Cryptogams generally.

The other species, *R. Gwynne-Vaughani,* a smaller plant, was only more complex than *R. major* in so far as the stems were studded with hemispherical outgrowths, sometimes hairy, which occasionally grew out into additional branches; these readily became detached from the parent plant and no doubt afforded an efficient means of vegetative propagation.

In the meantime, the Swedish botanist, Dr. Halle, had discovered, in the Lower Devonian of Norway, a remarkable fossil, closely resembling the fruit of a large moss; he named it *Sporogonites.* The specimens were carbonised, not petrified; Halle described the structure of the capsule as resembling that of the Bog moss, *Sphagnum,* but the state of preservation was such as

to render the interpretation difficult. Kidston and Lang, however, on investigating another of the Rhynie plants, *Hornea*, obtained results, which confirmed Halle's account of his fossil. In general organisation, *Hornea* was as simple as *Rhynia major*, but different in the rhizome, which was massive and tuberous, The spore-sacs were merely modified ends of certain branches; in the interior of each sac there is a central column of sterile tissue, over-arched by the spore-bearing layer, exactly as in the capsule of the Bog-moss and a few other mosses, or as in the fossil *Sporogonites*. This removes all doubt as to the presence of a "columella" in some of these ancient fructifications, a point of great importance as suggesting an affinity with the Bryophyte line.

In their general organisation *Rhynia* and *Hornea* are as simple as some of the common seaweeds, such as *Furcellaria* or *Pycnophycus*, which are by no means among the most highly differentiated of their class. At the same time, the vascular system and stomata show that the Rhynie plants had already adapted themselves to life on land. It is curious, that these plants have already been referred, by different botanists, to three of the main divisions of the vegetable kingdom,—to the Pteridophyta, the Thallophyta and the Bryophyta.

The third of the Rhynie genera, *Asteroxylon*, was much more complex than the other two. The rhizome resembled that of *Rhynia*, but was without hairs; the branched aerial stems had a somewhat highly developed vascular system, and were clothed with little leaves, like those of a club-moss but simpler in structure. Fertile shoots and sporangia, resembling those of some of the Carboniferous Ferns, are found in association but not in actual connection with the *Asteroxylon* stems. The plant appears to have made a considerable advance in the direction of the higher Vascular Cryptogams, but cannot be definitely placed in any of the recognised groups; it is regarded as combining certain characters of the Ferns, the Club-mosses and the *Psilotum* family.

The earlier Devonian Flora, as illustrated by the Rhynie fossils, with which many others, less well preserved seem to be akin, thus contained the relics of very simple types of vegetation, which may be interpreted as primitive. At any rate they are quite different from any groups of plants now living or found in the later rocks. They may even serve to give some idea of the early transmigrant races, which at some more remote period first effected the colonisation of the land. It must not, however, be forgotten, that there is evidence for the existence of other early Devonian plants of a far higher grade of organisation.

When we reach the upper Devonian Flora a great advance is found; the plants of that age were for the most part of higher types, well characterised Vascular Cryptogams or even Seed Plants, approaching the well known vegetation of the Carboniferous Period. The Devonian Formation has thus come to be of paramount interest in our attempts to decipher something of the past history of plant-life.

Ancient Earthworks in the Bournemouth District.

INTRODUCTORY.

The following survey aims at presenting a detailed record of the ancient earthworks in the vicinity of Bournemouth.

It is a matter for regret that such survey was not undertaken fifty years ago. Then, heather and Scots pine covered the hills that rise from Southbourne to Parkstone; now, they are covered with new roads and houses. In this process of change from country to town prehistoric sites have been destroyed, and similar destruction is threatened wherever the heathlands are developed for residential purposes; for ancient earthworks are both inherently durable yet liable to removal. On the one hand they withstand the elemental waste of centuries, secure in their earthen obscurity, neglected, and regarded almost as natural features of the land: on the other they are always liable to careless obliteration when present-day requirement is hindered by mound or bank or ditch. Hence the importance of record. Much has been lost, yet much may be preserved. At the least, presence or absence of ancient earthworks indicates the measure of prehistoric occupation of a district. Survey is preliminary work. It places on record the sites where evidence may be found relating to this or that period; and, if its compass needle points truly, such record should give helpful direction to local archæological investigation in the future.

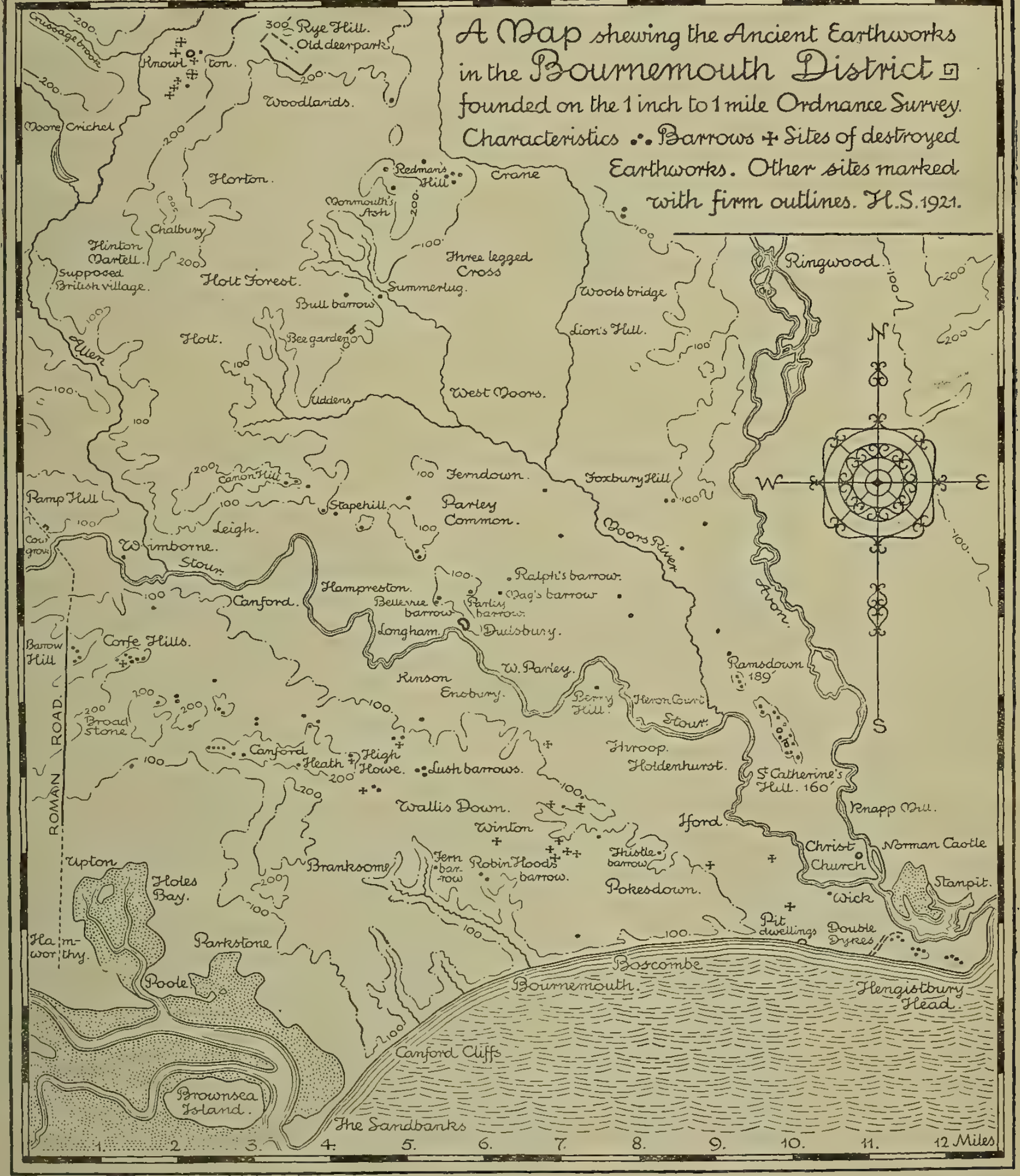
The Boundaries of our survey run as follows:—From Hengistbury Head, up the Avon, to Ringwood—thence to Verwood—thence to Sutton Holms—thence to Allen river near Knowlton—thence down Allen river to Wimborne—thence to Cowgrove—thence along the Roman road to Hamworthy.

North, and West as far as Cowgrove, the limits of this boundary follow the old outbounds (1618) of Cranborne Chase, east, they follow the 1279-80 Perambulation limit of the New Forest, both of which districts have been archæologically surveyed in "Ancient Earthworks of Cranborne Chase," and "Ancient Earthworks of the New Forest," by the writer.

The soil of the area thus delimited is for the most part of the Tertiary formation, overlaid by flat-topped hills of Quaternary plateau gravel near Christchurch, Bournemouth, Wimborne, and Ringwood. A zone of Reading Beds reaches from Wimborne to Sutton Holms, rising to over 300 feet above the sea at Chalbury, and on Rye Hill, resting, to the West, on chalk which outcrops along the valley of Allen river. The Stour and Avon flow through wide valleys of alluvial deposit. As a whole, excepting the zone of Reading Beds and the alluvial valleys, the soil of this area compares with that of the New Forest, and may be summarily described as poor.

A Map shewing the Ancient Earthworks in the Bournemouth District

founded on the 1 inch to 1 mile Ordnance Survey.
Characteristics ∴ Barrows + Sites of destroyed Earthworks. Other sites marked with firm outlines. H.S.1921.



Founded on the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office.

BRITISH
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NATURAL
HISTORY.

The Southern boundary of our District terminates in gravel uplands that rise to 260 feet above the sea, and that curve crescentwise from Hengistbury to Lytchett. On the seaward side of this barrier suburban building now prevails as before said. Behind it, inland, the Stour flows in sinuous loops from side to side of its valley, through meads "liable to floods," on its way to join the Avon, where Christchurch Priory stands at the end of a promontory that divides the rivers. Below its walls the Stour and Avon unite, after distant miles of divergence from sources one mile apart on Stourton ridge.*

There is no such continuous upland on the Western side of the Avon valley. St. Catherine's Hill rises to 160 feet above the sea for only a mile, then, after an abrupt rise to 189 feet at Ramsdown, the level drops for two miles to 50 feet and below, then rises again to 100 feet and over at Foxbury Hill, and so continues to Ringwood.

The prospect from St. Catherine's Hill looking inland over our District shows wide stretches of low-lying heathland through which the Moors river winds sluggishly, edged by rough pastures, Inclosures of Scots pine, and moorland wastes, which latter gradually rise to wooded hills, twelve miles distant—the landmarks of Holt, Chalbury, Knowle, Woodlands and Rye Hill, on the Northern boundary of our District.

These lowlands tend to be water-logged, and it is only in recent times that they have been partially reclaimed for habitation and cultivation. They were probably barren swamps in prehistoric times, and earthworks are not to be expected here. Our survey confirms such expectation. The earthworks will be found on the uplands. The exceptions are few, the rule remains.

Considered broadly in periods the ancient earthworks in this District may be classified as follows:—

Prehistoric earthworks of the *Bronze Age*.

This period is represented by barrows, of which 113 still stand, while 20 have been destroyed, but their sites are recorded in old maps. Fifty-nine standing, 16 destroyed, south of the Stour, 54 standing, 4 destroyed, north of the Stour. Others have probably been destroyed of which no record has been made. They are in close proximity and most frequent on Corfe Hill: on Canford Heath: at Winton: on Hengistbury Head: on and round St. Catherine's Hill: and near Dudsbury.

Reference to the map will show the distribution of the remainder. The relative Bronze Age occupation of various parts of our District can be conjectured by the recurrence of barrows. Knowlton circles also probably belong to the Bronze Age.

Bronze Age or *Iron Age*.

Dudsbury: Hengistbury Promontory Fort: "Fort" on St. Catherine's Hill?

*This refers to the Wylye branch of the Avon.

Roman.

Roman road from Badbury to Morionio: Hamworthy: Bee-garden, Holt Heath? Cowgrove? Earthwork on St. Catherine's Hill?

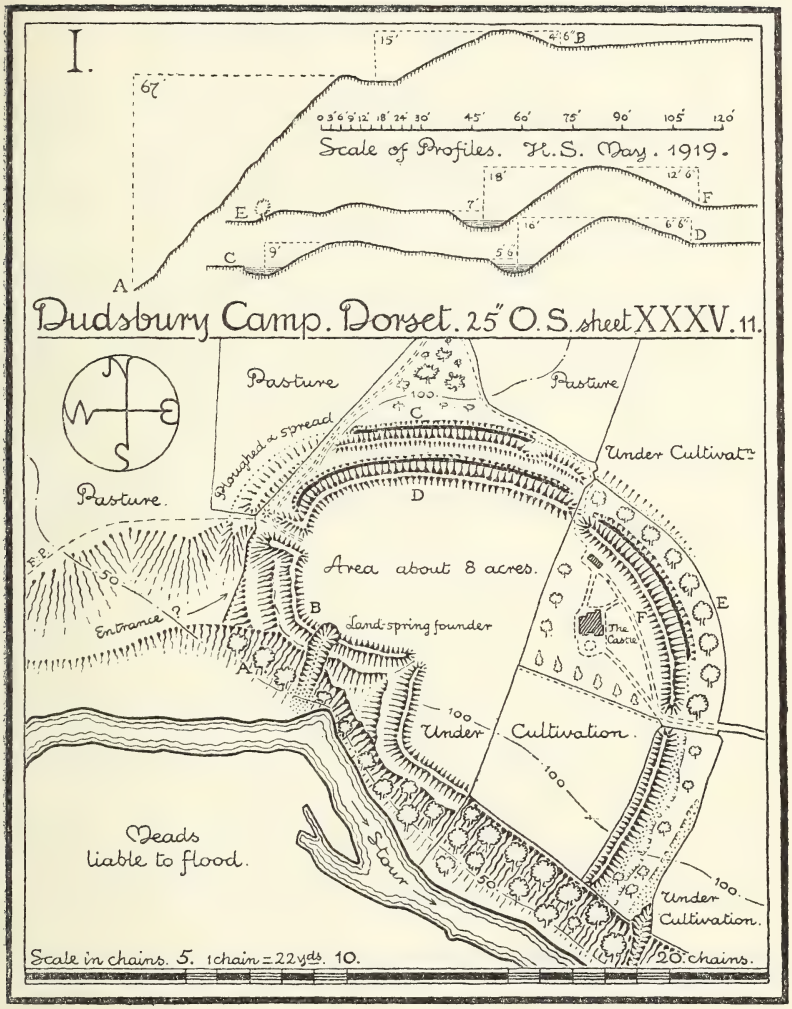
Mediæval.

Christchurch Castle: Earthwork on St. Catherine's Hill: Cowgrove? Bee-garden, Holt Heath? Rye Hill deer-park enclosure. So-called "British village" near Allen river? The moat at Leigh Manor House, near Wimborne.

DUDSBURY

The investigation of ancient earthworks leads the enquirer to beautiful, out-of-the-way places, amongst which Dudsbury will be memorable for its spacious view across the lower reaches of the Stour Valley, seen over woodland growth that covers a precipitous foreground, below which the river winds through meads dotted with feeding cattle. Herons stand motionless in the river shallows; kingfishers dart along the back-waters; sea-gulls hover, and pitch on their inland choice; while the field archæologist perforce tarries in his special quest of the past, to gaze and admire as he sees the present beauty that lies beneath his view.

This camp (probably **Dodesberie** of Domesday, the hill of **Dodo, Dudo, Dudd,** O.E. personal names), stands on the verge of a promontory bluff that rises abruptly above the left bank of the Stour. For the latter-day significance of its position in Dorset—close to the Hampshire boundary,—cf. "Early Wars of Wessex," by Albany F. Major. To the North, this hill is connected with the upland heath plains on which stand several great barrows; to the West it falls towards Stour Valley pastures; to the East it continues at 100 foot level for about 200 yards, and then falls gradually towards the wide valley formed by the confluence of the Stour and the Moors River. The soil is sand, gravel and clay. The area contains about 8 acres, is under cultivation, and rises gradually from the sides towards the centre. It stands slightly over 100 feet above the sea, and about 70 feet above the river, and its form is that of a bean-shaped semi-circle, the irregular verge of the hill-scarp being the base of the form. On this, the South Western side, the defences consist of a wide rampart on the crest of the scarp, beneath which, 18 feet below the top, there is a platform ledge, or berm, on the face of the scarp which gradually dies away towards the South-East; while towards the North-West, after a gap caused by a land-spring founder, this ledge widens as it approaches the Western entrance, and has a parapet on its verge —similar to the ledge defences on the scarps of Hambledon Hill. On this side of the hill-scarp there is a second and a broader platform ledge below the top one—which may be natural, but seems to be an artificial defence. On the semi-circular side of the area the



defences appear to have consisted of double ramparts and ditches, but, except on the Northern side, the outer rampart and ditch are now partially destroyed. The inner rampart is greater on the North-Eastern and Eastern sides than on the Northern and Western sides, and both rampart and ditch are well preserved at F—E (see Plan I), and along the length of the entrenchments adjoining, but the outer rampart is confused and spread by cultivation and tree-planting, while the outer ditch is filled in. On the Eastern side, only the inner rampart is well preserved, its ditch has been partially filled in, and cut about by cultivation, and similar destruction has befallen the outer entrenchments.

For most of the year the existing ditches of this camp are full of water, thereby indicating the retentive, clayey nature of the soil.

The ramparts of the semi-circular side of the area are overgrown with oak, holly, furze, bramble and bracken which obstruct survey, but which have preserved these earthworks from surface waste beneath the elements. Such overgrowth has been omitted in plan representation because it would have confused the entrenchment delineation.

Having thus briefly described the area and entrenchments of Dudsbury, let us consider the entrances. The principal existing entrance is a roadway on the Eastern side, leading to "The Castle," which passes through a gap in the inner rampart. There is nothing in the earthwork construction here to indicate that this was an original entrance. The foot-pathway entrance on the Northern side also appears to be modern. But on the Southern and Western sides of the area there are two entrances that are ancient without doubt, of which the Western entrance presents difficulties and uncertainties as to its approach, while the Southern entrance approach has been partially obliterated by a founder of the hill-scarp.

This latter entrance has been named "the water-gate" by Warne in "Ancient Dorset." It passes up a steep, re-entrant hollow on the hill-scarp—of which the lower part has foundered, and is now precipitous—and is flanked on either side of the re-entering scarps by the platform ledges already described, above which rise the area ramparts, incurving, and commanding this steep entrance, until it reaches the crest of the hill. All the upper portion of this entrance is undisturbed and in good preservation.

The Western entrance is now used as a cart-way approach to the area. The cart-way track crosses the outer spread bank and filled-in ditch from North-East to South-West, skirts the existing inner ditch, crosses a hump that may indicate a wasted rampart, and then turns East as it enters the area through ramparts that both outcurve and incurve; the incurving horns appear to have been partially destroyed by cultivation.

On the Western side of this cart-way the plough has been at work—as well as on the Northern and Eastern outsides of Dudsbury. Warne in "Ancient Dorset" (1872), thus refers to such destruction: "The entrenchments on the North are partially levelled by the plough, and would soon have disappeared under the progress of agriculture, had not Sir Ivor Guest been fortunately made acquainted with the work of destruction, who, as lord of the soil, immediately gave peremptory orders that not another spadefull of earth should be removed."

Perhaps this accounts for the reversion to pasture of the field whereon "ploughed and spread" is noted in Plan I?

Warne's plan of this Western entrance is not verified by the existing surface evidence. There are no signs of a third rampart, and the outer defences of the approach, which he shows, appear to belong to the natural configuration of the land.

In E. A. Downman's plan of this entrance (dated 1900), he shows the outer " ploughed and spread " rampart and ditch of Plan I, as curving outwards (for which superficial evidence is wanting), and disconnected with the existing rampart and ditch on the Eastern side of the cart-way, and he indicates the cart-way as the original approach to the Western entrance. Neither the third rampart nor the outer defences of Warne's plan are shown in Downman's, but he connects the ploughed and spread ramparts with the South Western rampart that crowns the hill scarp.

The outer rampart and ditch may be clearly traced from the Eastern side of the cart-way—where they now end as well-preserved entrenchments—across the cart-way, across the wire fence, along the line marked " ploughed and spread " in Plan I, up to the Western footpath leading to the entrance. Here the spread rampart appears to end, but surface indications of the ploughed-in ditch appear to cross the footpath and to end on the verge of the scarp, down which its soak is observable.

If the present-day surface indications have been thus correctly estimated, we must conclude that the Western outer approach to Dudsbury cannot have followed either the line of the **foot-path** or of the **cart-way**—both of which appear to cross the outer ditch (now filled in).

There is an alternative approach that I suggest, namely, up the slopes of the pasture below the footpath, on a line passing from South to North between the platform ledges on the hill-scarp on the Eastern side, crowned by the out-curved inner South Western rampart, and the pasture scarp surmounted by the partially destroyed outer rampart on the Western side.

Such approach has been confused by founders, by the making of a gateway, of a modern ditch and boundary bank, by the plough, and by cart-way and footpath, but the lie of the land, and the increased platform ledge defences beneath the inner rampart indicate its probability. Here the assailants of the camp would be at the utmost disadvantage, as they struggled up the steep path of the approach, fully exposed on their right hand, unshielded sides to the defenders' missiles, while at the summit of such approach—where it turns to the East through the final neck that leads into the area—there are surface indications of a barrier rampart connecting the Northern inner rampart with the "ploughed and spread " outer rampart.

Only excavations could solve this problem of the Western approach to Dudsbury. Sections cut across the footpath and the cart-way at the places where they appear to cross the line of the outer ditch would prove or disprove the conjectures suggested by superficial survey. Indeed, excavation at Dudsbury must be

desired by every archæologist who visits this site. There are certain patches in the area where the soil turns up a different colour from that of the surrounding soil, and where the crops fail. There may be information awaiting discovery here beneath the surface. Excavation for knowledge might yield evidence as to the original period and varying occupation of this site, while at present we are only able to infer from its castra-metation that Dudsbury is pre-Roman. Without evidence from excavation surmises as to its past are guess-work.

In surveying Dudsbury the physical conditions of the site have to be taken into consideration; namely, the wasting nature of its sandy, gravelly, clayey soil—dug as ditches—raised as ramparts—shelved as platform defences on a steep scarp liable to founder; and the erosion of a river that brings down much flood-water in winter, and that appears to have varied its course. We may be sure that the Stour did not flow in its present channel below Dudsbury when this camp was made—say 2,500—3,000 years ago. Now, the scour of the flood-water sweeps along the precipitous base of the hill-scarp on which Dudsbury ramparts are perched, and has removed all traces of soil founders which have scored the scarp—excepting lumps of sandstone that may be seen in the stream bed when the water is clear. Then, this hillside must have admitted access from the river level to the "water-gate" entrance. Accordingly we may infer that the ancient river channel was farther removed from the foot of the hill, and that such foot projected farther into the valley. The backwater marked in Plan I. seems to indicate a change of channel in comparatively recent times, and there is local hearsay remembrance in confirmation.

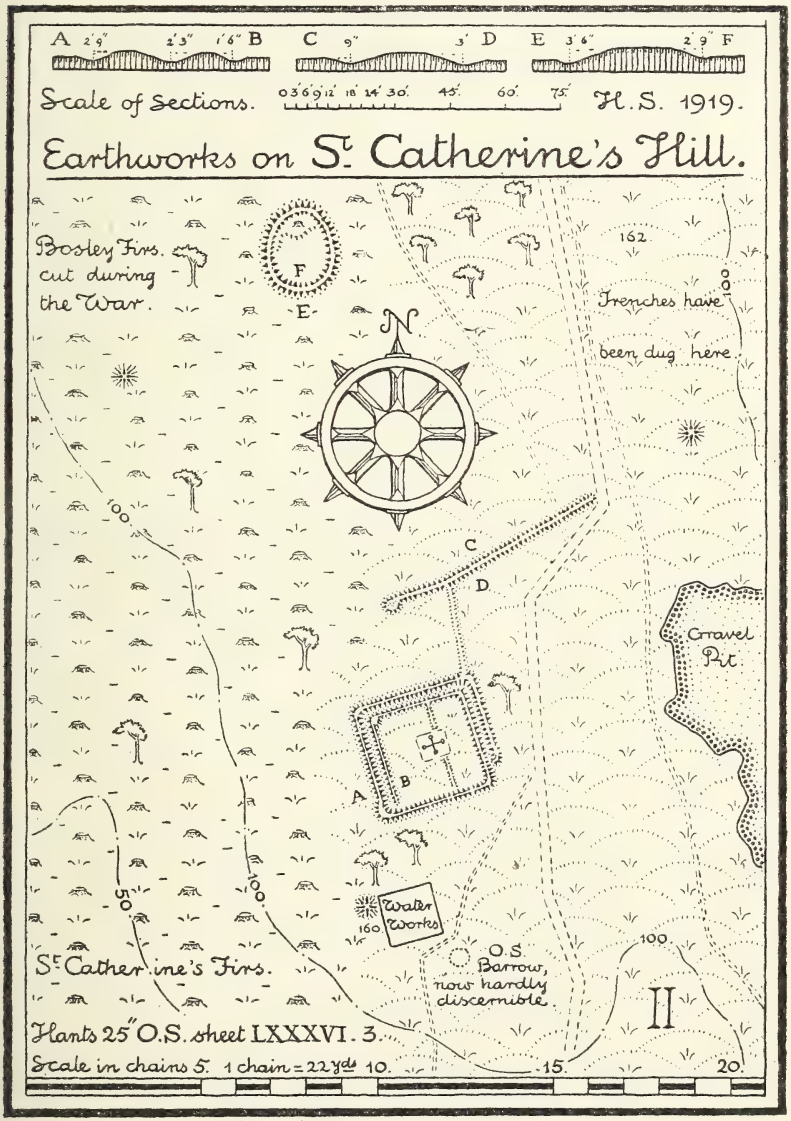
The Stour is now fordable at Longham, half a mile distant, South West of the Western entrance; and below Red Hill, one and a half miles distant, South East; and I am informed that there was a ford between Dudsbury and Longham flats, quarter of a mile distant.

EARTHWORKS ON ST. CATHERINE'S HILL.

St. Catherine's Hill stands between the lower reaches of the Avon and Stour rivers. Its ridge plateau rises 162 feet above the sea, and extends for nearly a mile from North to South. The soil is gravel and sand. This hill, and its Northern outlier, Ramsdown, 189 feet above the sea, are isolated landmarks, visible from afar amid broad river valleys and low-lying stretches of heathland.

St. Catherine's Firs and Bosley Firs, which covered the Western slopes of St. Catherine's Hill and crowned its summit, have been cut down during the War, while the heathland on the ridge plateau has been worn bare by military traffic and usage as a training ground. It is seamed with trenches, littered with wire entanglements and defaced by slab and clot-built shelters. Under such circumstances it is remarkable that so little damage has been

done to the ancient earthworths on the ridge. We owe a debt of gratitude to the authorities who have issued effectual orders for preservation, re-inforced by protection, namely, encircling post and barbed-wire fencing.



☩ = Foundations of chapel.

The partial destruction of a diminutive pound beside a barrow just outside the Northern limit of Plan II does not appear to amount to much loss. What remains of bank and ditch measures 14 feet over-all, and does not suggest ancient earthwork.

This site was chosen by the Britons for burial but not for defence. Eleven barrows stand on St. Catherine's Hill, three on Ramsdown, and two on the foot-hill to the North above Hurn railway station. The only other (apparently) British earthwork is on St. Catherine's Hill—a small, oval enclosure that does not suggest defence as its purpose.

Some of these barrows stand on the verge of the hill-scarps, and, possibly owing to their position, or to their having been excavated without discovery of interment, have been supposed to be "Roman Watch Towers." They resemble many other barrows raised on the gravel bluffs above the Avon, and the adjoining low-lying heathland, e.g., on the verge of Rockford Common above Rockford Farm; of Newlands, above Moyles Court; of Plumley Heath, and Pistle Down near Verwood. In all these examples the upward slope of the bluff scarp is continued by the barrow mound profile, and it is only on the ridge side of such barrow that a semicircling ditch may be traced. The choice of position is unusual, and, I believe, local.

There is an outlying hillock, near Blackwater Ferry across the Stour, marked as a huge barrow in the Ordnance Survey, but which I am inclined to think is natural. Somewhat similar outlying hillocks, and some in process of formation by denudation beneath the elements, will be found on the Southern and Eastern sides of St. Catherine's Hill. Others may be seen, on similar formation, between Foxbury Hill and Avon Castle; around Mount Ararat, Verwood; on Crane's Moor below Burley Beacon; and on Ogdens Purlieu. They are denuded sand hillocks, partially protected by a capping of iron sandstone—tell-tale diggings for which will often be found on their summits.

Apart from barrows St. Catherine's Hill and Ramsdown are deficient in British earthworks. It would seem that the promontory fortress on Hengistbury Head, three miles distant, and the camp at Dudsbury above the Stour fords, four miles distant, sufficiently supplied the Britons' need for local defensive safety. The small oval enclosure marked "Fort" in the Ordnance Survey is not worthy of the name. Its area from North to South measures 40 yards, from East to West 28 yards; and it is surrounded by a broad, spread bank rising 3 feet 6 inches above a small outside ditch. The entrance is not apparent. Tree-planting, surface waste and soil accumulation on the Northern side of the area add to the difficulties of superficial survey and estimation, but the situation, the size, and the earthworks of this enclosure suggest pastoral rather than defensive purpose.

To the South of this oval enclosure, 264 yards distant, may be found a curious, precisely planned earthwork with an area measuring 170 feet square, surrounded by slight double banks and ditches on three sides and by a single bank and ditch of increased profile on the fourth. The entrance is not apparent. The setting out of these banks is unusual, and resembles the lines of the Greek key pattern, or of the paths in a square planned Mizmaze—"Chemin de Jérusalem" leading continuously to a centre. There is an outward bulge at the S.W. corner, and a low mound at the N.W. inner corner of the earthwork. Two low banks partially bisect the area, leaving an open space in the centre which is occupied by slight mounds that indicate, and yield evidence of building foundations said to belong to a chapel dedicated to St. Catherine, of which nothing seems to be known. The site is well-preserved, and free from trees, knowledge would surely be obtainable here by excavation, and the origin and occupation of this earthwork proved. Meantime, "probably mediæval," may be conjectured from superficial survey, though Roman attribution should be noted. At the Eastern outer corner of this earthwork a low bank slants Northwards from the enclosure bank, with a slight ditch on the Eastern side, which, at a distance of 47 yards, joins a larger bank with slight ditches on either side, running South West to the North East, 150 yards in length; ending at the South West in a roundish enlargement, 57 feet in diameter, with a central, shallow depression; and at the North East, abruptly*, where the main trackway crosses its line. The surface of the ridge plateau has been so much cut about on this Eastern side that the possible continuation of this bank may have been destroyed here, but the trackway skew seems to indicate avoidance of crossing this bank, i.e., that it ended as at present when this trackway was made. I am at a loss to interpret the purpose served by these oddly aligned banks, but they appear to belong to the same period of earthwork as that of the square area described above, and to have been made without defensive intention.

The site-seer must not omit to scramble up the steep, slippery scarp of Ramsdown, for here, besides the three barrows that crown the summit, he will see a fine view of the Avon valley, New Forest and the distant Island, across a foreground that has not been disturbed by the recent military activities on St. Catherine's Hill. Stately pines and luxuriant rhododendrons clothe Ramsdown —the remnant that remains after war-time timber cutting near by.

The above earthworks are referred to in "Field Archæology as illustrated in Hampshire," by J. P. Williams-Freeman.

* This bank is similarly shown in the 1872 6in. O.S. sheet. It should be noted that the ancient earthworks on St. Catherine's Hill and around Bournemouth are shown with more precise detail in the 1872 survey than in more recent surveys.

CHRISTCHURCH CASTLE.

The only existing earthworks belonging to the Norman Castle of Christchurch consist of the mound or motte, which rises about 20 feet above the adjacent garden, and on which stand the ruins of the keep. Since the Castle was dismantled in Cromwell's time, all other traces of its earthwork plan have been destroyed by modern builders and gardeners. "Traces of the ditch enclosing the whole space of the Castle, about 100 yards square, have been found running along the line of Castle Street and Church Street." (Gleeson White, "Christchurch and its Neighbourhood.")

There is an historical account of this Castle in vol. IV. of the Victoria County History of Hampshire, and it is referred to in "Field Archæology as illustrated in Hampshire," by J. P. Williams-Freeman.

EARTHWORKS AT KNOWLTON AND RYE HILL.

The ancient site of Knowlton is marked by four earthwork circles of which only one is in fair preservation, and by six barrows near by of which two are in good preservation. It has been described in "Ancient Dorset" by J. C. Warne, p. 102 in "Earthwork of England" by A. Hadrian Allcroft, p. 564, and in the "Ancient Earthworks of Cranborne Chase" by the writer, p. 46. I have no new facts to add to these descriptions. But as one purpose of this survey is to indicate ancient sites where future excavation might yield results, I may point out that the best preserved of these earthwork circles, i.e., that within which stand the ruins of Knowlton Church, appears to be the least likely to yield satisfactory evidence of the period and purpose of these circles. Its area and encircling ditch and bank have been considerably cut about—probably when the church was built — and the original underground evidence has presumably been disturbed and confused. The two circles on the Western side, towards Allen river, seem to present better chance for the excavator, for although they are ploughed and spread, yet beneath this top surface obliteration their inside ditches* would probably be found intact, and their original area-surface undisturbed by latter-day diggings. Excavation might be undertaken here with good hope of obtaining knowledge.

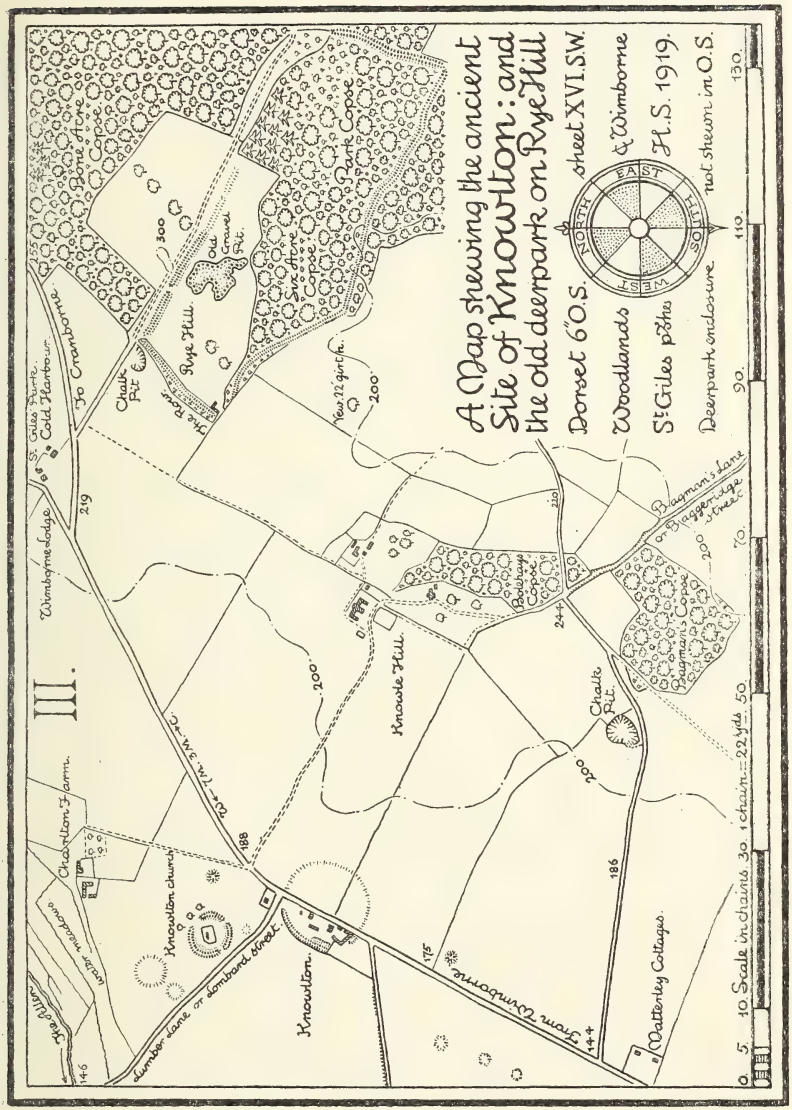
The diameters of these circular, presumably sacred earthworks, are as follows :—

1. The largest circle, of which only fragments exist, near New Barn Buildings ..... 209 yards (about)
2. Area of the existing circle within inside ditch ..... 38 yards
3. } (almost obliterated) ..... 77 yards (about)
4. } ..... 44 yards (about)

The following diameter measurements of ancient, circular, sacred earthworks and of disc barrows in Wilts, Dorset, and Hants are given for comparison :—

Avebury (across area within inside ditch] ..... 420 yards, N.E. to S.W.
according to Sir R. C. Hoare's measurements) ..... 390 yards, N.W. to S.E.
Stonehenge (across area within encircling bank : outside ditch according to Sir R. C. Hoare's measurement) ..... 113 yards

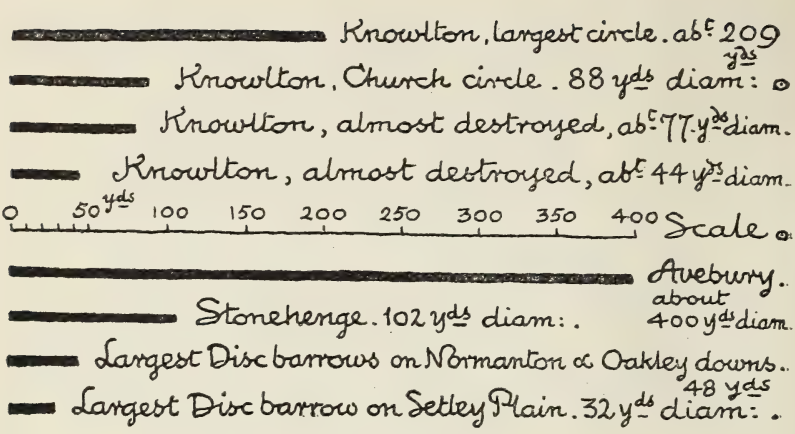
* *See* "Ancient Dorset," by J. C. Warne, p. 103.



The largest disc barrow circle—

On *Normanton Down,* near Stonehenge (across area within inside ditch) ..... 48 yards
On *Oakley Down,* Cranborne Chase ..... 48 yards
On *Setley Plain,* New Forest ..... 32 yards
Circular Earthwork (without a ditch) of Sir R. C. Hoare's "Pond barrow" type, on *Green Moor, Beaulieu Heath,* New Forest (across area within encircling bank) ..... 34 yards

The smallest disc barrow that I have measured is on *Ibsley Common,* New Forest, 18 feet across area within encircling bank, 50 feet over all, across outside limit of encircling bank.


Knowlton, largest circle. abt 209 yds
Knowlton, Church circle. 88 yds diam:
Knowlton, almost destroyed, abt 77 yds diam.
Knowlton, almost destroyed, abt 44 yds diam.
0 50 yds 100 150 200 250 300 350 400 Scale.
Avebury.
Stonehenge. 102 yds diam:.
about 400 yds diam.
Largest Disc barrows on Normanton & Oakley downs.
Largest Disc barrow on Setley Plain. 32 yds diam:.
48 yds

The alignment of the three partially obliterated barrows that stand 400 yards to the South West of Knowlton suggests the question—had their position any ritual significance?

If a line is drawn through the centres of the first and third barrows (as shown in the 6 inch Ordnance Survey sheet), towards the Knowlton circles, it will pass through the Western arc of the earthwork that encircles the church. If through the first and second barrows it will pass through the Northern entrance, the direction being N.N.E.

The direction of the " Avenue " at Stonehenge is slightly E. of N.E.

Barrows placed in a line may be found in many places. We cannot say if, thus aligned, their (possible) ritual position was regarded as in rank or in file. But, either way, if their positions are compared they neither conform nor approximate to one direction of the compass. In this instance, the position of these three barrows does not seem to be specially significant of ritual alignment dictated by one of the Knowlton circles.

RYE HILL. WIMBORNE ST. GILES.

The approach to this site is along a broad, fenced drove-way that turns off the highroad near the Wimborne Lodge of St. Giles' Park. There is a gate 300 yards distant from such turn. Here the drove-way ascends a steep knap through open fields that have reverted to pasture, the soil changes from Chalk to Reading Beds, and beneath the shade of old oaks* on the South Western side of the way will be found a bank and ditch that cross the hill for a distance of about 300 yards, running North West to South East.

* One of these oaks measures 19ft. 9in. in girth at 4ft. from the ground. There is a fine, solitary yew, the position of which is shewn in Plan. Its trunk is difficult to measure owing to one side being overgrown with shoots, but it appears to be about 22ft. in girth at 4ft. from the ground.

The over-all measurement of this earthwork is 32 feet, the top of the bank being about 3 feet above the ground on the North Eastern side, and 4 feet above the bottom of the ditch which is on the South Western side.

The bank is shown in sheet XVI. Dorset 6 inch Ordnance Survey.

The same sheet shows a length of bank extending for 200 yards in a hedgerow continuation of " Six Acre Copse "—about 300 yards to the South West of the above.

Investigation proved that these detached earthworks were really connected, and that they were portions of a bank and ditch that enclosed a large deer-park, and which can be traced continuously, along the " Row "—the South Western side of " Six acre Copse "—through " Park Copse" up to its North Eastern limit. Here neither bank nor ditch can be clearly traced, but probably the present boundary of " Park Copse " represents their course. Outside " Park Copse," North West, on land that has been ploughed but has now reverted to pasture, the course of this earthwork may again be traced although it is ploughed and spread, and it leads to the top of Rye Hill where it joins the well-preserved bank and ditch first mentioned. Thus a circuit enclosing about 90 acres is completed.

The Parish boundary between Wimborne St. Giles and Woodlands follows the South Western bank of this enclosure.

The adjoining place-names of " Deer Park Farm " and " Deer Park Ponds " indicate the purpose of this earthwork which is old but not ancient.

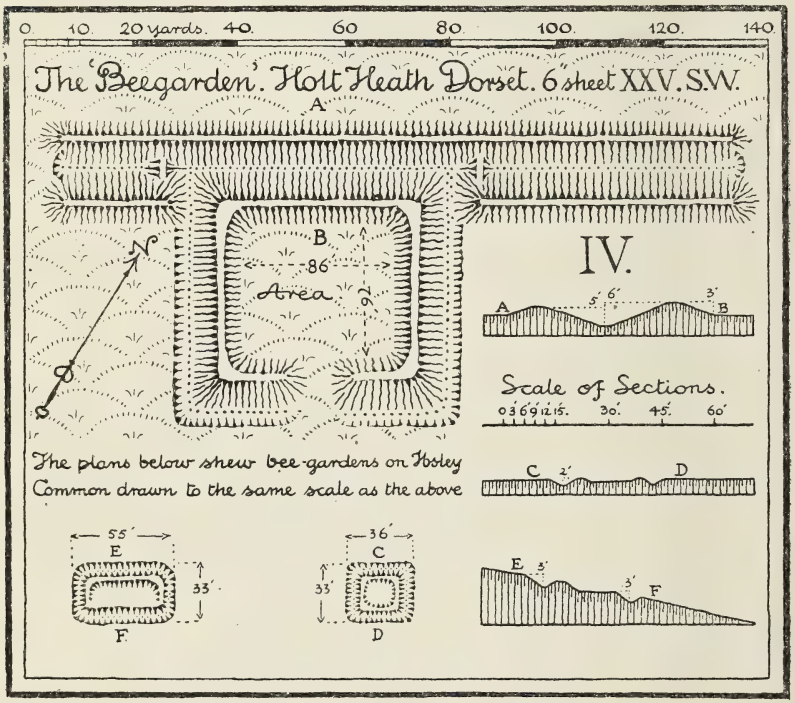
The view from the top of Rye Hill is very extensive, and includes the whole district of our survey.

The place-names—Lombard Street and Baggeridge Street—(see Plan III.), raised hopes that have lacked fulfilment. I have been unable to discover any vestige of Roman Road connecting the line of these streets either with Ackling Dyke towards the North West or with an Avon valley crossing towards the South East. The present-day appearance of Baggeridge Street, which is narrow and deeply sunken, suggests pack-horse traffic; and the same suggestion is given by the trails that cross Redman's Hill (see Map of the District), apparently leading towards the line of the above streets.

THE " BEE-GARDEN," HOLT HEATH.

This earthwork is situated on the Eastern side of Holt Heath, on a gentle slope overgrown with scattered Scots Pine. The ground rises from 100 feet near the site, to 185 feet on the top of the Heath, one-third of a mile distant to the North West. The soil is sand, gravel and clay. The head-spring of a runnel that flows to Uddens water rises 100 yards distant to the South West.

The earthwork consists of a small, square enclosure, the area of which measures 86 feet by 76 feet, with a little causeway entrance in the middle of the South Western side. It is enclosed on this, and on the two returning sides, by an inner bank and an outer ditch, the top of the bank being about 3 feet above the area, and 5 feet above the bottom of the ditch; and on the North Western side, by an inner and an outer bank of equal size, with an intervening ditch. The earthworks last described are prolonged in a straight line 13 yards to the South West of the enclosure, and 45 yards to the North East; the length of ditch bounding the enclosure being partially stopped at its return corners by low banks crossing the overlapping ditch from side to side; beyond these low, cross banks the ditch continues as before mentioned, getting shallower as it continues, and terminating at each end with an upward ramp rising to the undisturbed heath surface.



Excepting on either side of the entrance where the banks are spread, these earthworks are well-preserved and consolidated. A few rabbits burrow in the banks of the enclosure, but no sherds are revealed in their scrapes. Neither rabbits nor moles work in the area or in the ditches. The area is level. There are no surface indications of habitation.

The existing " Bee-garden " origin attributed to this earthwork demands scrutiny. Comparison with " Bee-gardens " on Ibsley common which, according to local memory, were in use 80 years ago, shows that this Holt Heath earthwork is of an altogether different type. Enquiries made of two old inhabitants elicited the following information : They and their fathers before them had lived on Holt Heath, and had always known this earthwork called " the Bee-garden," but had never heard tell that bee-skeps had been put here. One of my informants indeed doubted its " Bee-garden " origin. He attributed it to " they smugglers." His doubt, though not his supposition, is worth attention.

I suggest that this name was given to an earthwork of unknown purpose by folk who had distant acquaintance with the New Forest Bee-gardens, which, according to local tradition, were used by bee-keepers of Cranborne Chase.

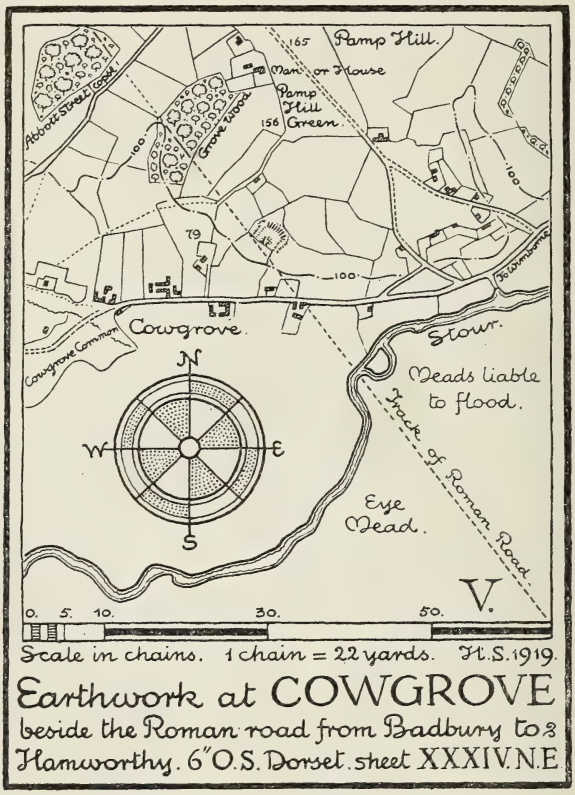
The precise planning, the area dimension, the causeway entrance and the consolidated condition of this earthwork seem to indicate that it *may* belong to the small, squarish enclosure type of which the following are local examples, namely : *Handley Hill, Cranborne Chase,* which has an area of about 75ft. square, enclosed by a slight bank and outside ditch 18ft. over-all, with a causeway entrance in the middle of its Western side. Thorough excavation by General Pitt-Rivers, ("Excavations in Cranborne Chase," vol. IV.), pointed to " the probability of the work being of the early Roman times, and its purpose appeared to be pastoral, i.e., a cattle-fold." *" Church Yard," Sloden, New Forest,* has an area of about 106 feet square, enclosed by a bank which rises 2 feet 6 inches above an outside ditch, 24 feet over-all, with a causeway entrance in the middle of the North Eastern side. Partial excavation here revealed no indications of habitation. Square enclosures of the same type may be found in the New Forest at *Studley Castle, Church Place, Denny Wait,* and *Church Place, Ashurst,* similar to that at Sloden in all respects except in the position of their causeway entrances. (cf. " Ancient Earthworks of the New Forest," by the writer.) .

The areas of the above examples compare approximately with that of the Holt Heath earthwork under consideration; but their earthworks are smaller and the difference is considerable. There may have been local requirements, either for keeping in or keeping out to account for the difference.

The possibility of Mediæval origin, in connection with Holt Forest adjoining, must not however be overlooked. The overlapping lengths of ditch between two banks remain as puzzles whether Roman or Mediæval. Minor earthworks sometimes present major difficulties in superficial estimation. Purposes of defence, or of drainage do not seem to fit the facts here. Excavation for knowledge is the only test that might supply answers to the questions which this earthwork provokes—but the excavator must be one who can endure, and apply, merely negative evidence.

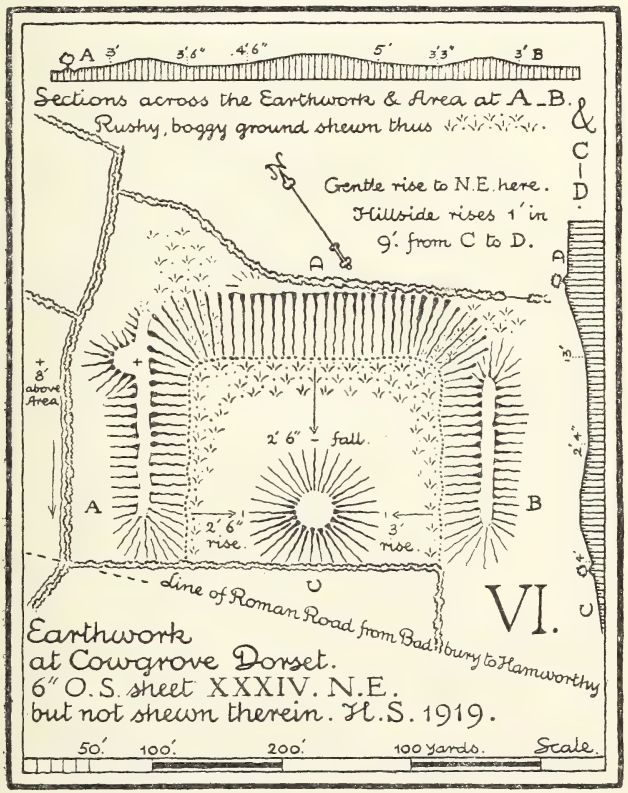
Earthwork at Cowgrove, near Wimborne.

THIS earthwork—which is not shown in the Ordnance Survey—was discovered by Mr. H. Le Jeune, and he considered that it was a Roman military outlook station to protect the river crossing of the Roman road.



It stands just above the 100 foot contour line, on a hill-side that rises towards Pamp Hill Green on the North, and falls towards the road from Cowgrove to Wimborne on the South. The soil is stiff clay of Reading Beds formation, which poaches and creeps down the side of the hill. The area and adjoining land are under pasture. The earthwork consists of a three-sided enclosure, bounded on *the North Western side* by a wide, spread bank that rises towards the North up to a mound which projects on the Western side, and the top of which (+ in Plan VI.) stands 8 feet above the area. Beyond this mound the bank dies away and the Northern corner ends in a scarp cut into the hill-side, rush-grown and water-logged. This scarp treatment continues along *the*

North Eastern side of the area. A field bank and hedge gradually encroach upon the top verge of the earthwork here and have destroyed the surface evidence. The level of the ground is now the same on either side of this hedge, but before this encroachment begins there are indications of a slight bank near the North Western corner. The Eastern corner compares with the Northern corner in all particulars. *The South Eastern side,* like the North Western side, is bounded by a wide, spread bank that falls towards the South, and that dies away in a manner similar to the termination of the North Western bank at the corresponding Southern end. There are no present indications of original ditches either in or outside of the earthworks described above; but within the area wide, rush-grown, water-logged depressions line the bases of the banks and scarp—the water-logged area being widest on the North Eastern side. Drain-cuts that appear to be modern have been made along these water-logged bases. The surface evidence of *the South Western side* has been partially destroyed by a field bank and ditch and hedge. In the centre of this space, 50 feet from the



respective bases of the North Western and South Eastern banks, and 70 feet from the base of the North Eastern scarp, rises a broad-topped mound, 100 feet in diameter, 2 feet 4 inches high on the North East side, and about 5 feet high on the North Western and South Eastern sides. On the South Western side it is cut by the field bank and ditch and hedge aforesaid.

The area thus enclosed contains about $\frac{3}{4}$ of an acre. The Earthwork soil of the mound appears to have come from the area, the level of which has been lowered to about 1 foot in 28 feet, on a hillside which falls about 1 foot in 9 feet. The South Western side of this earthwork is close to the line of the Roman Road from Badbury to Hamworthy, which is defined in Abbott Street Copse and Grove Wood, (to the North-West), then lost in cultivation, but traceable again as it crosses Eye Mead (to the South-East), by the growth of vegetation along its line.

The proximity of this unusual Earthwork to the line of the Roman Road aforesaid has been supposed to indicate some sort of connection therewith, but I have failed to find any evidence in support of such origin. The earthwork does not suggest Roman military precision, and is askew to the line of the Roman road. No pottery sherds are turned up here either by rabbits or moles. The broad-topped mound certainly appears to be the principal feature and purpose of the earthworks described above, while the squarish, scarped area towards the North seems to have been the quarry for its material.

I suggest that this may have been the mound for Saxon open-air meetings either for the Manor of Kingston Lacey, or for the Tythings of Abbot Street, Barnsley, Cowgrove and part of Stone. The Court Leet of the Manor of Kingston Lacey is now held at Cowgrove Farm, 150 yards distant from the mound in question. It should also be noted that earthwork sites for such open-air courts or meeting-places were customary around Wimborne.

e.g. *Badbury Hill,* for the Hundred of Bedeberia (Badbury).

A dún (site unknown), for the Hundred of Canendona (Canford, Canon Hill).

Cogdean, near Corfe Mullen, for the Hundred of Cocdena (Cogdean).

Chalbury Hill, for the Hundred of Celberga (Chalbury).

Knowlton, for the Hundred of Chenoltuna (Knowlton).

Loose-barrow, for the Hundred of Cereburga (Charborough).

Combsditch, for the Hundred of Concresdic (Winterborne Zelstone).

cf. " Key to Domesday," Dorset, Eyton, p. 143.

The earthworks on the North Western and South Eastern sides referred to above, were perhaps part of the lawful fencing of

the Court, while the mound marked with a + in Plan VI. may perhaps be compared, in minor degree, with the Bevis Mount Earthwork or " Execution Hill," adjoining the principal Moot Earthwork at Downton.

" **British Village** " **site** near High Lea Farm (on the road from Wimborne to Cranborne).—This site is marked in the Ordnance Survey on the left hand side of the high road from Wimborne to Cranborne—about 200 yards before the cross road branches to Witchampton. Close beside the road hedge a wide, irregular kidney-shaped depression extends into the adjoining field —now grass—formerly arable. The high road crosses it on a little embankment, which seems to indicate that the depression is older than the road. On the right hand side of the high road there are no signs of a farther continuation of this depression. Neither rabbits nor moles help us here, and there is no rank vegetation in the bottom of this hollow.

Fifty paces distant from the high road, there is a long, irregular depression, 147 paces long, 30 paces wide, and about 8 to 9 feet deep. Rabbits work in one place, and only throw up chalk. The vegetation at the bottom of this long trench is nowhere rank. There is no surface suggestion of subsoil secrets to be found here. I do not know on what evidence this was recorded as a British Village site. Cranborne Chase, adjoining, abounds in such sites —but none resemble these two large hollows. I am inclined to suppose that they may belong to diggings—for chalk, or for flints —at some by-gone period, and it should be noted that the Reading Beds clay, and the chalk adjoin here. Our fore-fathers knew, as well as we, that a top dressing of chalk benefitted clay soil.

Mr. O. G. S. Crawford has traced a **Roman road** from Winchester—Nursling—Cadnam—Stoney Cross to Ringwood and Hamworthy? cf. Appendix to " Field Archæology as illustrated by Hampshire " by J. P. Williams-Freeman. But subsequent investigation has led him to regard the westward line of this road, after Stoneycross, as unproven. Negative results have so far attended the quest for this supposed road across the Forest, and across the heaths that extend between Ringwood and Hamworthy. No vestiges have been found. Moreover there is no Roman evidence to indicate where this supposed road crossed the Avon. Neither at Ringwood, nor at Fordingbridge have Roman relics been found. Yet it is difficult to abandon the supposition that this Winchester—Nursling—Stoneycross road continued in the direction of Hamworthy, (Morionio).

Leigh Manor House (near Wimborne). The earthworks belonging to the truncated moat that now exists here, are so much cut about that reconstruction would be guess-work.

Heywood Sumner.

Earthworks in the Bournemouth District south of the River Stour.

THE portion of our district which lies to the south of the River Stour consists chiefly of a curious plateau which extends from Lychett Beacon (one mile west of the Roman Road) to Southbourne, with an isolated outlier at Hengistbury Head. The surface of this plateau slopes uniformly from about 260ft. above sea level on its western portion to 100 feet at Southbourne and Hengistbury. On the north it falls rapidly to the Stour valley-bottom, and on the south it is bounded by the low ground bordering Poole Harbour, and by the Bournemouth, Boscombe and Southbourne cliffs.

It is capped by gravel deposits, and for the most part the soil is poor and little cultivated, consisting principally of furze and heath land except where building development has occurred.

The plateau measures about 13 miles from west to east, and from 2 to 3 miles from north to south, except where it narrows off at its eastern extremity.

The small isolated tableland at Hengistbury Head is separated from the Southbourne heights by about one mile of low ground (originally probably part of the Stour valley-bottom), the surface of which is less than 30ft. above ordnance datum.

HENGISTBURY HEAD.

The Hengistbury plateau varies from 120ft. high at its western end to about 50ft. at the east, and measures 1,200 yards from west to east by 300 from north to south.

On the south it is bounded by cliffs falling nearly vertically to the sea beach, and on the north and west it falls steeply towards Christchurch Harbour, from which it is separated (on the north side) by 300 yards of low lying ground sloping gently to the water's edge.

At a distance of about 400 yards west from the foot of the high ground are two ramparts with ditches, called the Double Dykes, which extend from Christchurch Harbour on the north to the sea on the south, a distance of 500 yards, cutting off the eastern portion of the promontory and rendering it a camp of refuge and a safe dwelling place of considerable size and strength.

Mr. J. P. Bushe-Fox, F.S.A., who examined this site for the Society of Antiquaries in 1911-12, found conclusive evidence in the objects excavated and in the barrows opened that the low ground within the ramparts to the west and north of the Head was occupied in the Neolithic and Bronze Ages, and also during the Hallstatt, la Tène and the Roman periods. Not only was it occupied by a settlement over a considerable portion of the Iron age, but the fact that a large number of coins of distinctly British type were found, apparently made on or near this spot, and dating

from as late as 150 A.D., shows that a British community existed here in some degree of isolation and independence well on into the period of the Roman occupation. During Mr. Bushe-Fox's investigations, careful surveys and sections of the Double Dykes were made by Mr. D. Montgomerie, F.S.A.; it was therefore considered unnecessary to repeat the measurements in our present survey.

(*See* " Excavations at Hengistbury Head, Hampshire, 1911-12," by J. P. Bushe-Fox, F.S.A. Published by the Society of Antiquaries.)

" The main (eastern) rampart appears to have been about 8ft. to 10ft. high and 45ft. wide at the base. The main ditch 35ft. wide and 12ft. deep; the outer rampart 5ft. high and 30 to 40ft. wide at the base, and the outer ditch 6ft. deep and 20ft. wide." The main rampart appears to have been raised at different periods, as a thin dark layer, probably representing an old surface, occurs in it, and can be seen where the section is exposed at the southern end. Blown sand, both on the banks and in the ditches, has considerably modified the original contours. After a storm in 1913, when the sand and shingle had been washed away from the southern termination of the main ditch, a thick layer of black clayey substance was exposed on the beach, having the appearance of a puddled clay lining to the ditch bottom. This was probably the " black layer " indicated in Mr. Montgomerie's sections.

There are at present four gaps through the ramparts, but only one of them has any appearance of being an original opening, viz., the second from the north end, near the cottage. In this case the main rampart curves inward very slightly on each side of the opening. The northern portion of the fortifications has suffered considerable mutilation, the main ditch has been filled up, and the outer rampart destroyed.

During Mr. Montgomerie's survey nothing was found to indicate the age of the earthworks, but from the position of some of the objects discovered by Mr. Bushe-Fox they are probably earlier than the la Tène period.

As stated above, the present length of the Double Dykes is 500 yards, but erosion by the sea at the southern end is proceeding rapidly, and it is stated that between 1907 and 1912, 35ft. had disappeared. By comparing the 6 inch O.S. Map (Hants, sheet LXXXVI.) of 1870 with that of 1907, the encroachment of the sea during the interval of 37 years is shown to be 160 feet, making a total reduction in length of the ramparts of nearly 200ft. in the past 49 years.

The only other presumably defensive earthwork within this portion of our district was a curious structure, now destroyed, shown on the six-inch O.S. map of 1870, at Foxholes, Southbourne, just above the 50ft. contour line on the bluff overlooking the valley. It seems to have consisted of two parallel ramparts

about 50ft. apart, running nearly north and south, but bending slightly at their northern extremities, the eastern bank being 100 yards long and the western about 80 yards. On the longer bank near its northern end a mound is indicated. No other record of this earthwork has been found, and as the whole area is now covered by small houses it is impossible to form any conclusions as to its age or purpose.

BARROWS.

The distribution of the barrows in the district south of the River Stour is interesting and suggestive. Of the 75 now existing or recently destroyed, 69 are on the plateaux, while only 6 occupy the low ground. It is further to be noticed that they chiefly occur on that part of the high ground which lies nearest the River valley and remote from Poole Harbour and the sea. The highest portions of the plateau were most favoured by the barrow-builders, and it is noteworthy that the tumuli were frequently erected on sites commanding extensive views, the verge of a steep declivity being often chosen.

The principal barrow sites are on Corfe Hills near Broadstone, where there are 11 barrows; on Canford Heath, 18 barrows; near East and West Howe, 12 barrows; Winton, 13; and Hengistbury Head, 8, or 11, including those on the low ground. No barrows are found between the Bourne Valley and Poole Harbour, and only one in Bournemouth south of the Christchurch Road.

This distribution appears to indicate, as Mr. Heywood Sumner suggests, that the River Valley was favoured as feeding ground by the barrow-builders of the Bronze Age, to which period most of the plateau tumuli seem to belong.

Mr. Bushe-Fox opened three barrows at Hengistbury Head. The large one near the ramparts yielded a number of striking objects, including an urn containing a cremated burial, an incense pot of peculiar form, several gold ornaments and amber beads. Another, on the high ground, contained several urns and three cremated burials. The third, also on the high ground, yielded no burials, but contained several small pots. Each of the barrows contained numerous worked flints.*

Mr. St. George Gray has recently opened other barrows on the promontory, but the results have not yet been published.

Mr. W. de C. Prideaux, of Dorchester, opened several barrows in Talbot Woods some years ago, but of these also no account is yet forthcoming. Other barrows have been opened from time to time, such as that at Redbreast Plantation near Moordown, where 96 urns were discovered in 1873, and more

* *See* "Excavations at Hengistbury Head, Hampshire, 1911-12," by J. P. Bushe-Fox. Published by the Society of Antiquaries.

recently a similar case at Pokesdown, where a number of urns were unearthed during road-making operations. No proper examination appears to have been made in either of these cases.

Of the 75 barrows mentioned above as having formerly existed in this district at least 16 have been destroyed, chiefly as the result of road-making and building operations in the Winton neighbourhood. Of the contents of these no record has been preserved.

On the other hand the number includes 8 barrows, which do not seem to have been recorded before, and which are not indicated on the 6 inch O.S. maps. Amongst these is a curious group of four tumuli on Canford Heath near the bridle path, about $\frac{3}{4}$ of a mile from the Wimborne-Poole Road. They form a straight line running slightly N. of East and S. of West, the westernmost being close to the verge of the plateau, and the two outer ones being only 200ft. apart.*

Of the low-ground barrows, three are within the Double Dykes, one at Wick, one was at Tuckton Bridge (an urn from this is now in the Free Library entrance), and one in a field west of Iford Lane. The site of the last in indicated on the 6-inch O.S. Map as far back as 1870, with a note that "urns and crucible" were found.

It is much to be deplored that so many barrows, and at least one other earthwork, have been destroyed without proper examination or record of their contents.

THE ROMAN ROAD.

The Roman Road, which forms the south-western boundary of the district embraced by the present survey, has been traced from Badbury Rings to Poole Harbour at Hamworthy. It crosses the Stour at Eye Mead and maintains its straight course till after it has passed the small loop stream at Lake. Parish boundaries follow the loop stream, which seems to indicate that this was originally the course of the main channel. The Roman Road then turns sharply to the south and mounts the side of the valley. In this part nearly all trace of it is lost, but on the Corfe Hills it appears as a well defined ridge, 27ft. wide by 2ft. 6in. high, running in a straight line towards Hamworthy.

Mr. O. G. S. Crawford, the Archæological Officer of the Ordnance Survey, has recently traced this road as part of a comprehensive survey of the Roman Roads in Hants and Dorset.

W. G. Wallace.

* On Berry Hill, an isolated elevation which lies in the bend of the river between Muscliff and Muccleshell, and rises a few feet above the 50ft. contour, is a low mound having the appearance of a degraded barrow. J. B. Johnston, M.A., in his "Place-names of England and Wales," suggests that "Berry" is a variant of "Barrow."

THE TREES IN THE WINTER GARDENS, BOURNEMOUTH.

(By H. Backhouse and the Rev. C. O. S. Hatton, B.A., F.L.S.)

IN addition to the Alphabetical list of Trees and Shrubs growing in the Winter Gardens given below, the following particulars may be of interest, and will help anyone more easily to identify the species :—

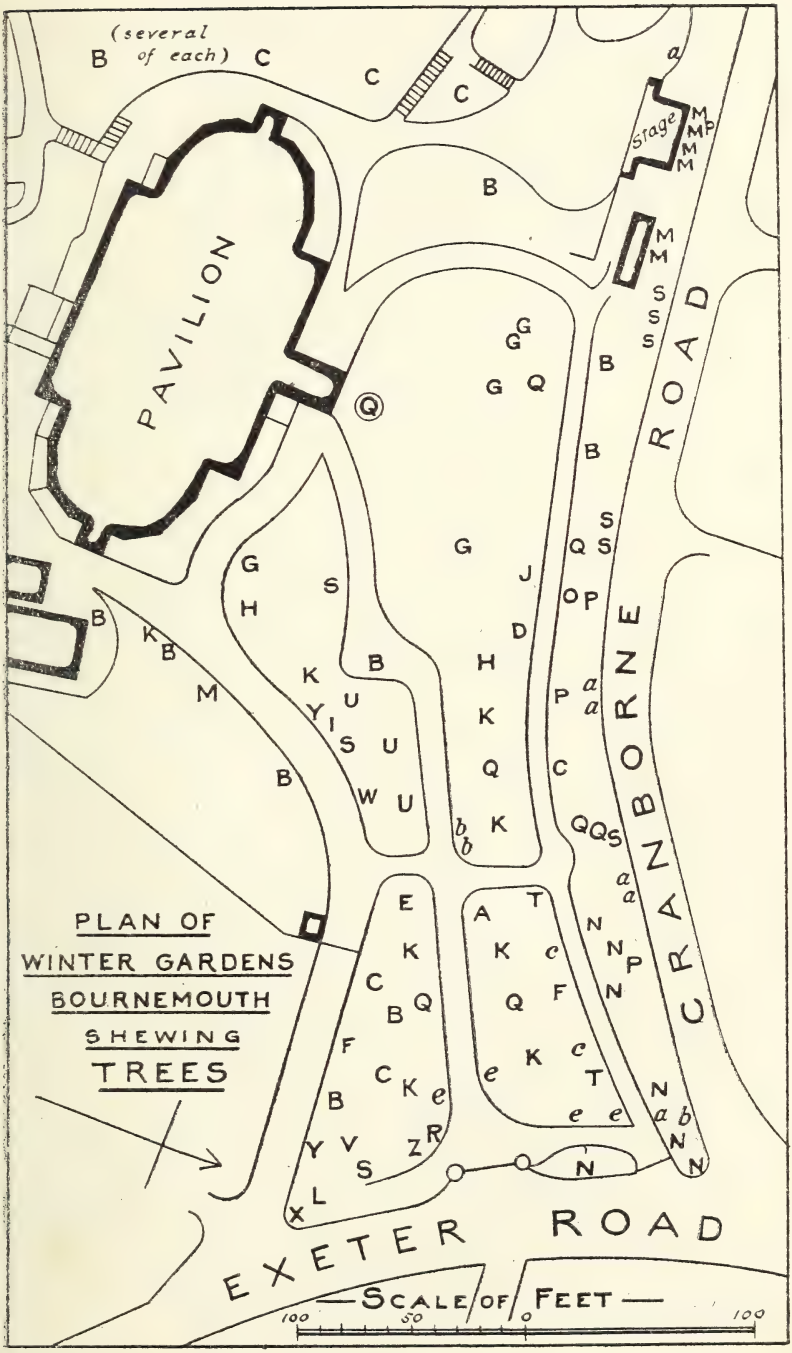
A. *Pinus excelsa.* Himalayan Blue Pine. Leaves in Fives, blue-green, 5-7ins. long, soft, pendulous; leaf-sheath $\frac{5}{8}$-$\frac{3}{4}$in. long. Cones cylindrical, 6-10ins. long, $1\frac{1}{2}$-$1\frac{3}{4}$ins. wide. It is a handsome, fast-growing tree, but requires a sheltered position, otherwise it has a bedraggled appearance. Native of the Himalayas.

B. *Pinus sylvestris.* Scotch Pine. Leaves in pairs, glaucous 2-$3\frac{1}{2}$ins. long; cones, 1-$1\frac{1}{2}$ins. long, conical. Buds resinous. The trunk has a beautiful red tinge, and is smooth, although in old trees it becomes fissured. Native of nearly all Europe, including Britain, also parts of Siberia. In the South of England, however, it died out and was reintroduced about the middle of the 18th century. One of the common pines around Bournemouth.

C. *Pinus Pinaster.* Maritime Pine. Cluster Pine. Leaves in pairs, dark green, 4-8ins. long, stiff; leaf-sheath $\frac{3}{4}$in. long; cones, usually in whorls, 4-7ins. long, persisting for many years. Buds non-resinous. The Pine plantations of Bournemouth are largely composed of this tree, which is one of the very best for planting in light, sandy soils. In the neighbourhood of Bordeaux this tree provides a large turpentine industry. Native of South Europe from France to Greece.

D. *Abies Nordmanniana.* Caucasian Fir. A tree reaching 200ft. in height in a wild state; young shoots shining grey-brown; buds non-resinous, ovate. Leaves very densely arranged, mostly on the upper side of the shoot, the lower ones being the longer, and spreading horizontally. The leaves measure $\frac{3}{4}$-$1\frac{1}{2}$ins. long, $\frac{1}{16}$-$\frac{1}{12}$in. wide, apex rounded and notched; very dark glossy green above. Cones 5-6ins. long, $1\frac{1}{2}$-2ins. wide, cylindrical, reddish-brown; bracts conspicuously protruded and bent downwards. Native of the Caucasus, Greece, and Asia Minor.

E. *Cupressus nootkatensis.* Yellow Cypress. This tree at first sight may easily be mistaken for some of the species of Thuya or Juniper, but if the cones are examined it will be found the scales are furnished with a triangular pointed boss. Native of Western North America from Alaska to Oregon.


(several of each)
PAVILION
Stage
CRANBORNE ROAD
EXETER ROAD
PLAN OF WINTER GARDENS BOURNEMOUTH SHEWING TREES
SCALE OF FEET
100
50
0
100

F. *Sequoia sempervirens.* Redwood. Leaves a very dark lustrous green above, arranged in two opposite rows, $\frac{1}{4}$-$\frac{7}{8}$in. long, resembling those of the yew, but whiter beneath. On leading shoots the leaves are arranged all round the branchlet. Bark of a rich brown red, of a fibrous nature, 6-12ins. thick in large trees. This tree sometimes reproduces itself by suckers from the root. A tree of the largest size much used in house building in Californian cities. Native of California and Oregon. It is nearly allied to the Wellingtonia.

G. *Cedrus deodara.* Deodar. Leading shoot arching; branchlets pendulous at the ends, always downy. Leaves 1-1$\frac{1}{2}$ins. long, needle-like, of a grey or glaucous green. Cones about 4ins. long, 3ins. wide, broadly egg-shaped, not often produced in this country. This is undoubtedly the tenderest of the Cedars, many being killed in the hard winters at the close of last century. Native of the Himalayas.

H. *Araucaria imbricata.* Chile Pine. Monkey Puzzle. An evergreen tree 50 to 80ft. high, of pyramidal or rounded form, all but the oldest parts prickly with living leaves or the remains of dead ones. Branches produced in regular tiers of five to seven. Leaves very uniform, ovate, with a slender spine-tipped point, from 1-2ins. long $\frac{1}{2}$ to 1in. wide; hard, rigid, and leathery; dark glossy green. Male and female flowers are usually borne on separate trees, but not invariably. Male flowers 3-5ins. long, female cones 5-7ins., taking two seasons to develop. The Araucarias in the Wimborne Road Cemetery in this town usually bear numerous cones every year. Unlike most of the Coniferæ which produce their new branches in whorls once a year from the previous year's buds, the Araucaria takes from 2 to 3 years to produce a new whorl. It also has the habit in the warmer parts of Britain of growing throughout the winter. The writer who had a tree of this species under observation found it grew 2$\frac{1}{2}$ inches in height between October and April This winter growth is doubtless the cause of so many Araucarias being killed and injured in the zero winters of 1860-61, 1880-81, and 1894-95. In the colder parts of England where the trees were at rest the frost had no effect upon them. Native of Chile.

I. *Ginkgo biloba.* Maidenhair Tree. A deciduous tree, over 100ft. high, unisexual, non-resinous. Leaves long-stalked, fan-shaped, tapering, like the pinnules of the maidenhair fern. So far it has not produced seed in this country, as unfortunately most of the trees are males, but the large specimen at Kew has recently been grafted with a portion from a female tree. In South Europe it seeds freely. Probably a native of Western China.

J. *Juniperus virginiana.* Red Cedar. A tree usually 40 to 50ft. high; the bark peeling off in long loose strips. Pyramidal when young. Juvenile leaves awl-shaped, arranged in pairs, $\frac{1}{8}$-$\frac{1}{4}$in. long, pointed, glaucous; adult leaves scale-like $\frac{1}{16}$in. long, pointed, ovate, overlapping. Male and female flowers usually on separate trees. Fruits roundish, $\frac{1}{4}$in. long, covered with a blue glaucous bloom. Native of the Eastern and Central United States, and Eastern Canada.

K. *Cordyline australis.* Formerly known as *Dracœna australis*, has long gracefully arching dark green leaves, giving the plant a Yucca-like appearance. The flowers are borne on racemes 4 to 5ft. long, are thickly clustered, white and bell-shaped. Not hardy in the colder parts of Britain. Seeds and suckers freely in Bournemouth. Native of New Zealand.

L. *Acer platanoides.* Norway Maple. A deciduous tree up to 90ft. high. Leaves 5-lobed, heart-shaped at the base, 4-7ins. wide, bright green on both surfaces, turning in autumn into various shades of red, brown and yellow. Flowers greenish yellow; fruit pendulous on stalks 2-3ins. long. Native of Continental Europe.

M. *Acer Pseudoplatanus.* Sycamore. A deciduous tree of the largest size. Leaves usually five-lobed, small ones three-lobed, 4-7ins. across, dark green and smooth above, paler and dull beneath. Flowers yellowish green; fruit on long, pendulous racemes; keys $1\frac{1}{4}$-2ins. long. Native of Europe, but not considered to be a true native of Britain.

N. *Quercus pedunculata.* Common Oak. A tree known to everyone, and common throughout the length and breadth of the land. It is only likely to be confused with *Quercus sessiliflora*, the durmast oak which has long-stalked leaves, but stalkless acorns, whereas *pedunculata* has stalkless leaves and long-stalked acorns. In the more mountainous parts of the North of England, the West of Scotland, and parts of Ireland, *sessiliflora* appears to be the commoner of the two species. A true native of Britain, and extending over a large part of Southern and Central Europe.

O. *Quercus Cerris.* Turkey Oak. A noble deciduous tree over 120ft. high; winter buds furnished with long downy scales; young shoots covered with greyish down. Leaves narrow, tapered at both ends, very deeply lobed, the lobes penetrating one-third to two-thirds towards the mid-rib. Acorns solitary or in pairs, the cup clothed with long downy scales. Native of South Europe and Asia Minor.

P. *Betula verrucosa* and *pubescens.* Birch. A deciduous tree of medium size with alternate leaves; unisexual flowers, both male and female catkins being borne on the same tree. Two of the best known features of the birches are the pecu-

liar bark and frequently white trunks. The bark is much used in some countries for canoe-building and roofing. The two species of birch *B. verrucosa,* and *B. pubescens,* appear to occur in about equal numbers all over the Bournemouth district; in *verrucosa* the young wood is not downy but furnished with glandular warts; in *pubescens* the young shoots are downy but not warted. Native of Europe including Britain.

Q. *Eucalyptus globulus.* Blue Gum. An evergreen tree of the largest size, with peeling bark. The leaves of young examples and those produced low down on older trees are curiously different from those of adults, being in the juvenile state opposite, heart-shaped, stalkless, very glaucous white, and standing out horizontally; in the adult state they hang down vertically, become stalked, much longer and sickle-shaped and greener. This Eucalyptus, which perhaps has been planted more than any other, is by no means one of the hardiest, and suffers more or less every cold winter. *E. coccifera, cordata* and *urnigera,* are all hardier, but undoubtedly the hardiest of all is *Gunnii.* Native of Australia.

R. *Berberis Darwinii.* Darwin's Barberry. An evergreen shrub of dense habit. Leaves very dark glossy green, stalkless, ¾-1½ins. long, the apex three-spined. Flowers on drooping racemes deep golden or orange-coloured. Fruit purple coloured, the size of small peas. Native of Chile.

S. *Laurus nobilis.* Sweet Bay, Poets' Laurel. An evergreen aromatic tree or shrub up to 60 feet high. Leaves alternate, narrowly ovate 1½-4ins. long, ½-1½ins. wide, dark glossy green. Flowers greenish yellow, small; the sexes on different trees. Fruit oval, shining black, ½in. long. Native of the Mediterranean region.

T. *Rhododendron Nobleanum.* A very fine early-flowering rhododendron raised by crossing *caucasicum* with *arboreum.* Flowers bright rich rose. It forms a tree up to 15 feet high, the leaves having a brownish felt beneath.

U. *Phormium tenax.* New Zealand Flax. A hardy plant, with something of the habit of a large Iris, and forming tufts of broad, shining leathery leaves 5 to 6½ft. high, and gracefully arched at the top. It flowers freely in the Bournemouth district, and may be used with fine effect as an aquatic. Native of New Zealand.

V. *Arundinaria japonica, syn. Bambusa Metake.* The bamboos are really woody grasses, mostly chracteristic of moist tropical regions. *Metake* is very hardy and was introduced as long ago as 1850. Stems 12ft. or more high, round, very hollow, erect, ⅛ to ⅝in. diameter. Leaves 7-12ins. long. Native of Japan.

W. *Calycanthus floridus.* Carolina Allspice. A deciduous shrub 8 feet or more high. Leaves 3-5ins. long, oval, rough to the touch, and dark green above; soft with a dense covering of short, pale down beneath. Flowers 2ins. or less in diameter, fragrant, produced in June and July. The leaves, wood, and roots have a pleasant, camphor-like fragrance. Native of the South East United States.

X. *Philadelphus.* Mock Orange, Syringa. A genus of deciduous shrubs. Flowers terminal, strongly scented, mostly pure white. Perhaps no genus of shrubs presents so many difficulties in the differentiation of its species as this. Natives of South East Europe, China, Japan, Western and South Eastern States of North America. Many of the garden varieties are hybrids between the wild species.

Y. *Ilex Aquifolium.* Common Holly. An evergreen tree up to 80 feet high. Leaves glossy dark green, 1 to 3ins. long, $\frac{3}{4}$ to $2\frac{1}{2}$ins. wide; very variable in size, outline, and toothing. Flowers small, dull white, fragrant; berries round, red, $\frac{1}{4}$in. diameter. May be either male, female, or bisexual. Native of Europe including Britain.

Z. *Prunus cerasifera Var. Pissardi.* Purple leaved Plum. A deciduous, round-headed tree up to 30 feet in height. Leaves ovate, $1\frac{1}{2}$ to $2\frac{1}{2}$ins. long, 1 to $1\frac{1}{4}$ins. wide; toothed. Flowers $\frac{3}{4}$ to 1in. across, pure white. Fruit smooth, red, 1 to $1\frac{1}{4}$ins. in diameter, round. This variety was first noted in Persia by Mr. Pissard, gardener to the Shah, and by him sent to France in 1880.

a. *Quercus Ilex.* Holm Oak. An evergreen tree of large size, developing a huge head of densely leafy branches. Leaves very variable in shape, most frequently narrowly ovate, sometimes entire, sometimes toothed. When quite young both surfaces are clothed with whitish down, which soon falls away leaving the upper surface a dark glossy green. Acorns usually $\frac{1}{2}$ to $\frac{3}{4}$in. long. Native of the Mediterranean region.

b. *Taxus baccata.* Common Yew. An evergreen tree up to 50 or 60 feet high, forming in age an enormously thick trunk, clothed with red-brown peeling bark. Leaves more or less in two opposed ranks, dark glossy green above, grey or pale green beneath, $\frac{1}{2}$ to $1\frac{1}{4}$ins. long, $\frac{1}{16}$ to $\frac{1}{12}$in. wide. Flowers unisexual, with the sexes almost invariably on separate trees. Native of Europe including Britain.

c. *Camellia japonica.* Common Camellia. An evergreen shrub, or small tree 30 to 40ft. high. Leaves deep glossy green, ovate, 3 to 4ins. long, shallowly toothed and of leathery texture. Flowers red in the wild state, but under cultivation many fine varieties have been raised, pure white, various shades of red, striped, and of various degrees of doubleness. Native of Japan and China.

d. *Castanea sativa.* Spanish Chestnut. A tree of the largest size 100 feet or more high, with a girth of 30 to 40 feet. Leaves oblong with a narrowed pointed apex, coarsely toothed, 5 to 9ins. long, 2 to 3½ins. wide. Nuts red-brown, usually in twos or threes, enclosed in a very prickly fruit, or bur 1½ to 2ins. across. The cultivation of this nut is now assuming large proportions in the United States. Probably introduced into Britain by the Romans. Native of South Europe, North Africa and Asia Minor.

e. *Aucuba japonica.* A unisexual, evergreen shrub, 6 to 10 feet high. Leaves opposite, leathery, narrowly oval; 3 to 8ins. long, 1½ to 3ins. wide; smooth, green and glossy on both surfaces, with usually a few large teeth towards the apex. On the male plant the flowers are produced on an erect panicle, 2 to 4ins. long; each flower ⅓in. across, with four purplish petals. Fruits borne by the female plant in clusters 2 or 3ins. long, each berry roundish oval, ½ to ⅝in. long, bright scarlet. The first plant brought to this country in 1783 was a female, and it was not until 60 years later Fortune introduced a male plant. Now small plants in pots, with large crops of fruit, can be bought from costers' barrows in London. Native of Japan.

It has not been thought necessary to mark all the Scotch and Maritime pines, the Oaks, Sycamores and Birches, and the numerous Rhododendrons growing in the Winter Gardens.

A	*Pinus excelsa.*	Himalayan Blue Pine
B	*Pinus sylvestris*	Scotch Pine
C	*Pinus Pinaster*	Maritime Pine
D	*Abies Nordmanniana*	Caucasian Fir
E	*Cupressus nootkatensis*	Yellow Cypress
F	*Sequoia sempervirens*	Redwood
G	*Cedrus deodara*	Deodar
H	*Araucaria imbricata*	Chile Pine, Monkey Puzzle
I	*Ginkgo biloba*	Maidenhair Tree
J	*Juniperus virginiana*	Red Cedar
K	*Cordyline australis*	
L	*Acer platanoides*	Norway Maple
M	*Acer Pseudoplatanus*	Sycamore
N	*Quercus pedunculata*	Common Oak
O	*Quercus Cerris*	Turkey Oak
P	*Betula verrucosa* and *pubescens*	Birch
Q	*Eucalyptus globulus*	Blue Gum
R	*Berberis Darwinii*	Darwin's Barberry

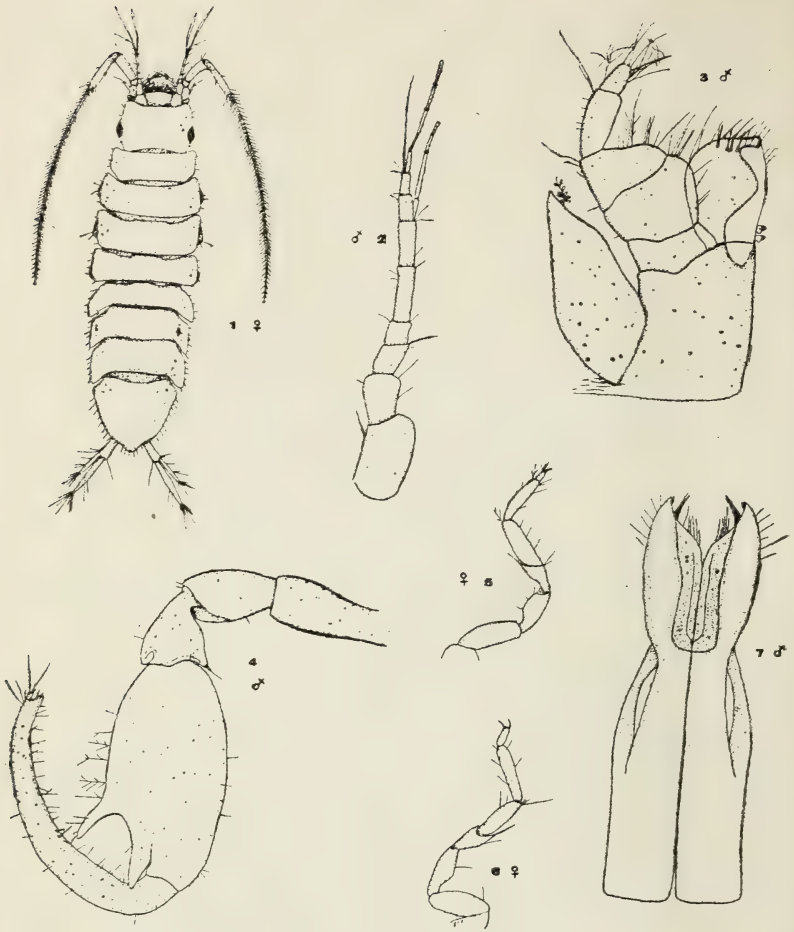
S	*Laurus nobilis*	Sweet Bay, Poets' Laurel
T	*Rhododendron Nobleanum*	
U	*Phormium tenax*	New Zealand Flax
V	*Arundinaria japonica. syn. Bambusa Metake*	Bamboo
W	*Calycanthus floridus*	Carolina Allspice
X	*Philadelphus*	Mock Orange, Syringa
Y	*Ilex Aquifolium*	Common Holly
Z	*Prunus cerasifera var. Pissardi*	Purple leaved Plum
a	*Quercus Ilex*	Holm Oak
b	*Taxus baccata*	Common Yew
c	*Camellia japonica*	Common Camellia
d	*Castanea sativa*	Spanish Chestnut
e	*Aucuba japonica*	

A New Species of Isopod (*Janiropsis parva*) from Fanning Island, Pacific Ocean.

By JOSEPH OMER-COOPER, F.L.S.

Recently I received a small collection of Isopoda, and Tanaidacea, collected amongst coral in the lagoon on Fanning Island by Mr. T. G. G. Tame, to whom I take this opportunity of tendering my sincere thanks. The gathering included several very minute specimens of an Asselotan, which does not appear to have been described. It corresponds closely in general appearance to *Janira minuta* (Richardson), though it shows specific differences in the structure of the first peræopod in the male, and in other respects. The sexual modification of the first peræopod, the structure of the maxillipeds and the restricted number of joints in the antennulæ are characteristic of the genus Janiropsis, and it would seem probable that were specimens of *Janira minuta* available, this species might also be found to be referable to that genus.

The 1st Pleopod of the male, the rudimentary nature of the dactylopodite of the 1st Peræopod, and the general structure of that appendage in the same sex, show a considerable divergence from the typical species of Janiropsis, *J. breviremis* (G. O. Sars) and an approximation to the genus Carpias (Richardson). These differences do not appear to be of sufficient importance for the formation of a new genus, and I have therefore included the species within the genus Janiropsis, while pointing out that it holds a position intermediate between Janiropsis, and Carpias.



JANIROPSIS PARVA.

Body (Fig. 1) compressed dorso-ventrally, about three times as long as broad. Male about one-third larger than the female; surface of the body smooth, with a few short setae at the lateral margins; the coxopodites of the peræopods are expanded into lobes, these " coxal lobes " project slightly in the 2nd, 3rd and 4th segments, and bear setæ which are a little longer and stouter than those of the lateral margins. It would seem probable that the " epimera " which Miss Richardson describes in *Janira minuta* and other species of nearly related genera, are identical with these " coxal lobes," and are not fused with the pleuræ as the term she employs would suggest. The telson is without serrations and has a slight median lobe posteriorly. Colour greyish white with scattered brown spots.

Cephalon subquadrangular, without median frontal lobe, the front being slightly recurved, and the lateral lobes very little produced and rounded. The eyes are compound, black, and conspicuous, projecting from the sides of the head.

The Antennules (Fig. 2) have a three-jointed peduncle, and a flagellum of five joints in the female, and seven in the male. The third and fifth joints in the female, and the fifth and seventh in the male, each bear a long sensory seta, or filament, while the terminal joint in both sexes carries at its apex a stout seta of considerable length, and normal structure. The sensory seta has a highly chitinised basal portion about one-fifth of its entire length, from which arises a slender filament, with a thin membranous cuticle, encircled by one or two highly refractile rings, and blunt at the apex.

The Antennæ are as long as the body with the uropods, in the male, and two-thirds as long as the body in the female. They bear a small but distinct exopodite on the third joint of the peduncle. The flagellum is slender, and has about fifty segments in the male.

The mandibles maxillulæ and maxillæ resemble those of *Janiropsis breviremis* (Sars).

The maxillipedes (Fig. 3) have the second and third joint of the palp considerably expanded, and the fifth joint bears a number of fine branched setæ at the apex. The endite has the inner margin curved inwards towards the buccal cavity. It bears two small coupling-hooks, and on its inner surface distally, four stout, and several fine setæ. The epipodite is subtriangular, and near its apex bears a seta of peculiar structure, possibly sensory in function. This seta is attenuated and flexible, and carries a number of minute transparent lamellæ, projecting from it like leaves upon a twig.

In the 1st peræopod there is a very marked sexual dimorphism, as in other members of the genus Janiropsis. In the female the 1st peræopod (Fig. 5) is rather shorter, and stouter than the other legs, but of normal structure and biunguiculate. In the male it (Fig. 4) is large and prehensile, being more modified in this respect than in any other member of the genus. The carpus is greatly dilated, and produced into two acute processes, one arising from the inner distal margin at the articulation, while the other is situated on the inner magin, about two-thirds from the proximal articulation. The propodus is curved and closes upon the carpus. The inner surface of both carpus and propodus bear numerous setæ, many of which are branched. The dactylus is very greatly reduced and bears two long, straight setæ, which may be vestiges of unguicula which appear otherwise to be entirely lacking. The remaining peræopods (Fig. 6) in both sexes are rather long and slender, and of normal structure.

The 1st pleopods in the female are completely fused to form an operculum, which is smooth with a few small setæ on its truncate, and slightly indented distal margin. In the male (Fig. 7) they are sexually modified. The lappets are not however produced laterally but curve inwards, and are not bifid at the extremity. They differ therefore not a little from those of the other members of the genus, and correspond very closely to those of *Carpias bermudensis* as figured by Miss Richardson. The remaining pleopods are of normal structure.

Length, exclusive of antennæ, 1·5 to 2 m/m, in female, 2 to 2.5 m/m in male.

Habitat, amongst coral in shallow water, Fanning Island Lat. 3° 51′ 23″ N. Long. 159° 21′ 50″ W.

Supplement.

Abstract of Presidential Address for Session 1920-21, given on Saturday, 16th October, by Lieut.-Col. Sir David Prain, c.m.g., c.i.e., f.r.s.

THE application of natural knowledge is a complex activity. It may be looked at from various standpoints. We concern ourselves now with the relationship this activity bears to those intellectual processes by which such knowledge is gained. Natural knowledge relates to matters of two kinds; matters known to need further investigation and matters supposed to have been investigated already. As to the former we may only say *That they are* and *What they do*; as to the latter we think we know *What they are* and *How they act.* Natural knowledge comes within the scope of two fundamental sciences; History, which declares what is known, and Philosophy, which endeavours to ascertain what is knowable, as to the nature of things and the consequences of acts. The current connotation of the terms " natural history " and " natural philosophy " does not alter the fact that so far as the advancement of knowledge is concerned, biology is as dependent on philosophy as on history; so far as the codification of knowledge is concerned history is as indispensable to physics as philosophy is. In the biological field the study of the characteristics of animals and plants as living organisms, and the study of the animal and the plant as vital mechanisms are merely complementary activities. The advancement of natural knowledge by philosophy and the co-ordination of that knowledge by history are only means to two great ends; on the intellectual side to the search after truth for its own sake; on the material side to the application of natural facts to everyday affairs.

There is reason to believe that early man was struck by the constant alternation of day and night. Day offered for examination a world of terrestrial things; night invited contemplation of a host of heavenly bodies. Contact with his surroundings taught man *That things are* and often showed him *What they do.* He avoided things hurtful and made empirical trial of things innocent. But the diversity of character which distracts attention was at times more potent than the agreement which arrests it. In his empirical trials he occasionally experienced an apparent lack of uniformity in *What things do,* which observation alone does not always explain. In spite of this man made considerable progress. He became a skilled craftsman, and his activities sometimes reached an artistic level. He amassed a wide practical knowledge of terrestrial things. But the use of sustained and repeated observation which made early man, without knowing it, a natural philosopher as well as a natural historian, did not equip him fully for further advance. New facts were thrust on him rather than looked for. He lacked the stimulus which the search for truth

supplies. He could use theory to explain facts, but could not test the accuracy of his theories. He made greater progress in the study of celestial bodies than in that of terrestrial things, because observation in this case was undistracted. He was thus able to institute an activity which had almost reached a scientific level before the principles of philosophical investigation were understood.

Early man explained *What things are* and *How they act* on the principles of sympathetic magic. Measures of protection were left to individuals especially interested in unedifying facts, who thus acquired an authority which they endeavoured to perpetuate. But doubt arose as to *What things are,* which revelation alone could dispel. The functions of the primitive wizard were then restricted to the practice of magic and the administration of banes and their antidotes. In classical times the roles of poisoner and physician became differentiated. The latter made such progress that he was able to substitute the doctrine of signatures for the principles of sympathetic magic. The former, whose guide was still these principles, was invited to help with his knowledge in the struggle maintained by a decadent dispensation against a higher faith, some of whose adherents were endowed with the "gift of miracles." When this higher faith at length prevailed, its help was sought by temporal power. The faithful had Divine sanction to make use of all available natural knowledge, but believed that all necessary natural knowledge had been vouchsafed. But this alliance between Church and State was followed by some inhibition of the "gift of miracles." The spiritual authority which had brought temporal power under subjection proved unable to protect the State against external attack. The Christian Church was the sole repository of the little classical natural knowledge which survived the barbarian conquest of the Western Empire. Ecclesiastical authority now placed natural and spiritual knowledge on the same footing; dogma was substituted alike for intellectual discussion and natural observation.

The fall of the last remnant of the Eastern Empire placed Greek learning at the disposal of Western Europe. Within the old Imperial limits this new knowledge induced a desire for freedom to investigate natural facts; beyond those limits it created a tendency to discuss spiritual problems. Supporters of dogma sanctioned the improvement of natural knowledge both for use and for discovery, provided the conclusions reached did not offend faith. Opponents of dogma as regards things spiritual doubted the morality of efforts to improve for use man's knowledge of natural things. Protestant intolerance towards natural study fortunately proved as ineffectual as Catholic intolerance towards spiritual discussion.

At first the new activity was largely individual, and was mainly directed to the acquisition of new facts for economic ends. Gradually it became apparent that even classical authority could

only be respected if its statements conform with renewed observation, and its theories abide the test of controlled experiment. The extension of knowledge was now realised to be a task beyond individual capacity. The XVII Century witnessed the establishment of associations for the improvement of natural knowledge. The intellectual outlook of earlier times was not, however, abandoned; improvement for use still took precedence over improvement for discovery. The XVIII Century saw a change of view. The improvement of her knowledge for use was no longer regarded as a duty by natural science; on the practical side this duty was relegated to the arts and crafts; on the doctrinal side it was delegated to the schools. Scientific associations concentrated their attention on the promotion of natural knowledge by means of discovery and codification. The XIX Century witnesses a further modification. The co-ordination of natural knowledge was now degraded to the position of a technical activity, and scientific associations for the advancement of science regarded discovery as the only legitimate object of investigation. Problems capable of solution with the aid of experiment have thus found more favour than such as depend for their elucidation on sustained and repeated observation, and an unfounded belief has arisen that the relationship between experiment and discovery is that of cause and effect. This misconception, to which history lends no support and philosophy affords no sanction, has diverted to the study of the knowable talent more suited to the co-ordination of the known, and devoted to the practice of the arts and crafts genius that might have extended the bounds of knowledge.

Besides this fortuitous consequence, the policy of the XIX Century has been attended by the inevitable one of specialisation in study, fully appreciated by this Society, whose members, to the advantage of the subjects concerned, segregate themselves into distinct sections. Specialisation has of late been subjected to uncompromising attack, and its most earnest supporters admit that it is attended by certain disadvantages. Being inevitable it does not need defence. As it possesses disadvantages steps are required to remove these. The remedy is easy when the etiology of the ailment is understood.

Specialisation is one of the consequences of the necessity which science in the XIX Century believed to be imposed upon her of dispensing with the help of history in the task of promoting natural knowledge, and of deciding that systematic and descriptive work is a technical rather than a scientific activity. That wholly unjustifiable conclusion was in turn the outcome of the decision by science in the XVIII Century to abrogate the duty of improving natural knowledge for use. All that is called for is the correction of these two mistakes by a reversion to the more philosophical conception of the XVII Century. In the healthier atmosphere of that time it was realised that the intellectual activities which the acquisition and the co-ordination of natural know-

ledge involve, though operative in distinct planes, and exercised under different conditions, are controlled by workers whose outlook is identical. There can be no conflict, no question as to precedence, between investigation and co-ordination. The search after truth for its own sake, and the application of natural knowledge to the business of life, are the objects alike of the worker in the laboratory, the museum, and the field.

The realisation of this truth enables the scientific worker to explain to industry what the improvement of natural knowledge implies, and enables the man of affairs to understand that the promotion of natural knowledge is a means to its application. The captain of industry can then appreciate the fact that if such application is to be effective this must be arranged for in two distinct ways. As each section of science is prepared to give all the help it can to every interest it may benefit, so must every industrial and commercial activity be ready to accept all the aid it needs from each section of science that can benefit it. The complementary activities are in this case operative in one plane and governed by similar conditions. But the standpoints of the workers are so different that there can be no conflict, no question as to precedence, between science and technology. The results of both find expression in the achievements of the arts and crafts.

When science remembers that codification is essential to the promotion, and industry learns that the help of those who seek truth for its own sake is necessary to the improvement of natural knowledge, both science and practice may appeal to the State with more confidence than they can at present for material encouragement and legislative assistance. When science resumes the direct application of her own results to ordinary affairs, those who co-ordinate natural knowledge will benefit by the discovery of unexpected relationships, while those who increase natural knowledge will learn that their facts may have a bearing on more than one practical interest. Such direct application of scientific results may often involve the convergence in one industrial field of several lines of natural investigation. The workers engaged will then find that restriction to special lines of study or methods of investigation is no barrier to participation in a common interest. The existence of a common interest is no impediment to the search for truth, and in no way detracts from the value of specialisation. But it permits facts to be seen in better perspective and leads to a fuller understanding of the essential solidarity of all natural knowledge. Even where those who advance knowledge are debarred from improving that knowledge for use, the co-ordination and application of their results by others may enable such investigators to appreciate activities that fulfil their own, and may serve as incentives to further discovery.

Some of the indifference with which the message of science to industry is at times received, is attributable to the neglect of science to apply her own results rather than to apathy on the part of industrial and commercial interests. The risk of this continuing will disappear if science can revert permanently to the philosophical attitude of two hundred and fifty years ago. Under the stress of war conditions this reversion did actually take place. What is to be hoped is that even under the disintegrating influences of reconstruction it may continue to be recognised that discovery and co-ordination are complementary means to the investigation of the knowable and the utilisation of the known. The disabilities of science must disappear if and when she is able once more to realise that one of her most urgent duties is the application of natural knowledge to the business of life.

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